

THE MARINE CORPS GAZETTE



JUNE 1930

Published Quarterly
by the
MARINE CORPS ASSOCIATION

The Marine Corps Association

ORGANIZED APRIL 25, 1913, AT GUANTANAMO, CUBA

EXECUTIVE COMMITTEE

MAJOR GENERAL W. C. NEVILLE, President

BRIGADIER GENERAL GEORGE RICHARDS, Vice-President

COLONEL LOUIS McC. LITTLE, Editor

CAPTAIN J. H. PLATT, Secretary-Treasurer

Headquarters, Marine Corps, Washington, D. C.

OBJECT OF ASSOCIATION

"The Association is formed to disseminate knowledge of the military art and science among its members; to provide for the improvement of their professional attachments; to foster the spirit and preserve the traditions of the United States Marine Corps; and to increase the efficiency of its members."—Section 2, Article 1, of the Constitution.

CONDITIONS OF MEMBERSHIP

Active membership open to officers of the United States Marine Corps and Marine Corps Reserve and to former officers of honorable service with annual dues of \$5.00. Associate membership, with annual dues of \$2.00, open to officers of the Army, Navy and Organized Militia and to those in civil life who are interested in the aims of the Association. Honorary members shall be elected by unanimous vote of the executive Committee.

Associate membership, with annual dues of \$2.00, including yearly subscription to THE MARINE CORPS GAZETTE, open to warrant officers of the Marine Corps, pay clerks; and all enlisted men of the Marine Corps.

CONTRIBUTIONS

The GAZETTE desires articles on any subject of interest to the Marine Corps. Articles will be paid for at the GAZETTE's authorized rates. Non-members of the Association as well as members may submit articles. In accepting articles for publication, the GAZETTE reserves the right to have such articles revised or rearranged, where necessary.

All communications for the Marine Corps Association and THE MARINE CORPS GAZETTE should be addressed to the Secretary-Treasurer, Marine Corps Association, Headquarters, U. S. Marine Corps, Washington, and check made payable to the same.

The MARINE CORPS GAZETTE

Colonel Louis McC. Little, U. S. Marine Corps, Editor

Vol. XV

JUNE, 1930

No. 2

CONTENTS

Frontispiece	
<i>Part of the Second Regiment, U. S. Marine Corps at Port au Prince, Haiti.</i>	
Announcement	(B)
THE DEVELOPMENT OF HAITI DURING THE LAST FISCAL YEAR	77
<i>From the Annual Report of Brigadier General John H. Russell, U. S. M. C., American High Commissioner.</i>	
DUTIES OF A MARINE DETACHMENT ON BOARD AN AIR-CRAFT CARRIER	116
<i>By Captain Bailey M. Coffenberg, U. S. M. C.</i>	
PROMOTION OF ENLISTED MEN	119
<i>By Lieutenant Colonel J. J. Meade, U. S. M. C.</i>	
PRACTICAL EMPLOYMENT OF THE THOMPSON SUB MACHINE GUN	121
<i>By Captain Roger W. Peard, U. S. M. C.</i>	
NOTES ON THE GEOGRAPHY OF CHINA	130
<i>By First Lieutenant W. L. Bales, U. S. M. C.</i>	

PUBLISHED QUARTERLY BY
THE MARINE CORPS ASSOCIATION

Editorial Office: Headquarters

U. S. Marine Corps, Navy Building

18th & B Street, N. W., Washington, D. C.

PRINTED AT LOMBARD AND SOUTH STREETS, BALTIMORE, MD.

ANNUAL SUBSCRIPTION \$2.00

Entered as second-class matter, March 27, 1929, at the Post Office at Washington, D. C., under the Act of March 3, 1879. Acceptance for mailing at special rate of postage provided for in Section 1103, Act of October 3, 1917, authorized November 23, 1918.

ANNOUNCEMENT

THE NEXT issue of the GAZETTE, which would normally be dated September, will not be published until November. This number will be a special edition in honor of the One Hundred and Fifty-fifth Anniversary of the organization of the Marine Corps. Through an agreement between The Marine Corps Association and a firm of publishers and advertising agents, this issue will be much larger and will be more elaborately printed and illustrated than any number that has appeared in the past.

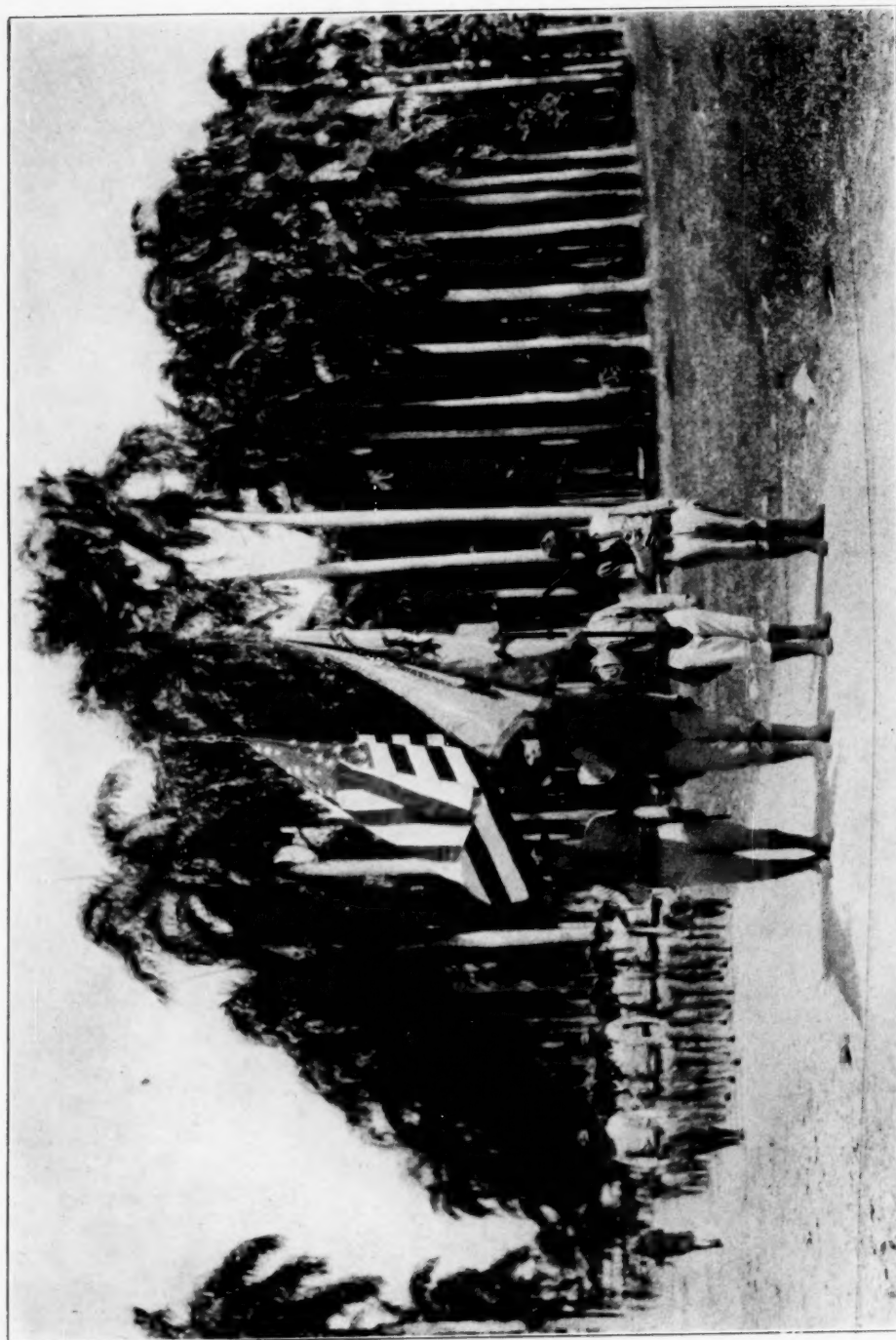
The Anniversary Number will contain a complete record of Marine Corps events for the past year together with much historical material that has never before been gathered between the covers of a single publication. It will also contain many articles of great professional interest. Captain John W. Thomason, Jr., has contributed an original cover design and a great many unpublished drawings. Other illustrations will be reproduced from photographs and old prints.

All Marine officers are urgently requested to submit professional articles, historical data, and old prints and photographs. All of those accepted will be paid for at the regular rate. The pictures and manuscript should be in the hands of the editor not later than August 20th.

The officers of The Marine Corps Association feel that this special edition, which has already received a generous response from advertisers, will show enough profit to assure the maintenance of the GAZETTE on an improved scale for some time to come.

THE SECRETARY-TREASURER,
MARINE CORPS ASSOCIATION.





Part of the Second Regiment, U. S. Marine Corps at Port-au-Prince, Haiti.

The Marine Corps Gazette

Vol. XV.

JUNE 1930

No. 2

THE DEVELOPMENT OF HAITI DURING THE LAST FISCAL YEAR

From the Annual Report of

BRIGADIER GENERAL JOHN H. RUSSELL, U. S. M. C.,
American High Commissioner

THE FISCAL PERIOD ending September 30, 1929, despite less favorable financial and commercial conditions than in 1927-28, was a fairly prosperous one and marked by the execution of productive developments certain to add to the wealth of the Republic. The unobligated surplus of the treasury was the highest on record. The long standing difficulties between the Haitian Government and the P. C. S. Railroad and the National Railroad were finally in process of satisfactory settlement. The long-needed Coffee Standardization Act was drafted and placed in operation. The coffee crop—the economic mainstay of the country—was good and future prospects were bright.

Unfortunately, in October came the collapse of coffee prices and the outlook for 1930 is one of some economic distress and retrenchment for the Government, business, and the population. This distress is being mitigated, however, by the capital brought in and new wealth afforded by productive developments of several large scale agricultural and other projects.

Politically, the end of the year was marred by abortive revolutionary disorders. These disorders were quickly and quietly suppressed with but one incident of bloodshed and were the occasion of a display of loyalty of the majority of the personnel of the Government departments and services. The masses of the population were untouched by the agitators.

EVENTS OF INTEREST DURING THE YEAR

Boundary Settlement. This vexatious question that had for many years been a source of annoyance to both the Haitian and the Dominican Republics was definitely settled by the signing of the Treaty of the 21st of January, 1929.

This amicable and just settlement should be a cause of joy to the peoples of both countries, and is one of the outstanding accomplishments of President Borno's able administration. The mixed commission that is, in accordance with the provisions of the above-mentioned Treaty, formed for the purpose of marking the border is pursuing its task and has already made definite progress.

Emigration. There has been no change in the emigration situation during the year. It is estimated that three thousand one hundred emigrants left Haiti for Cuba and the Dominican Republic, but a large percentage of them returned after the close of the cane-cutting season. In view of the depressed economic condition of the country and consequent increased unemployment, the Haitian Government is considering the advisability of temporarily removing some of the restrictions now placed on emigration.

President's Message. On the occasion of the convening of the Council of State in extraordinary session, on November 25th, 1929, President Borno addressed to that body a message, the last paragraph of which reads as follows:

"Gentlemen of the Council of State, I have awaited until the present session, in order to dissipate all possible uncertainty, to renew here the declaration that I have constantly made to you, that I have repeated to all who have interrogated me, that I am not a candidate for the Presidential Election of April, 1930."

This message is particularly important as it definitely states President Borno's attitude in the coming presidential election.

Changes in Cabinet. During the year the entire Cabinet was changed, the members of the old Cabinet being called to other Government posts.

Commercial Conventions and Agreements. The following international conventions and agreements were signed during the year:

Treaty of Amity, Perpetual Peace, and Arbitration, signed at Santo Domingo, February 20, 1929, between Haiti and the Dominican Republic;

Convention regarding exchange of correspondence between the American States, signed at Mexico City, November 9, 1926;

Pact for Outlawry of War (Kellogg pact) signed at Paris, August 27, 1928;

Convention signed at Havana, containing code of International Law, on February 20, 1929.

Judiciary. There has been no material change in the status of the Judiciary during the year under review. The problem of the reform of the Judiciary is of absolutely fundamental importance for Haitian development.

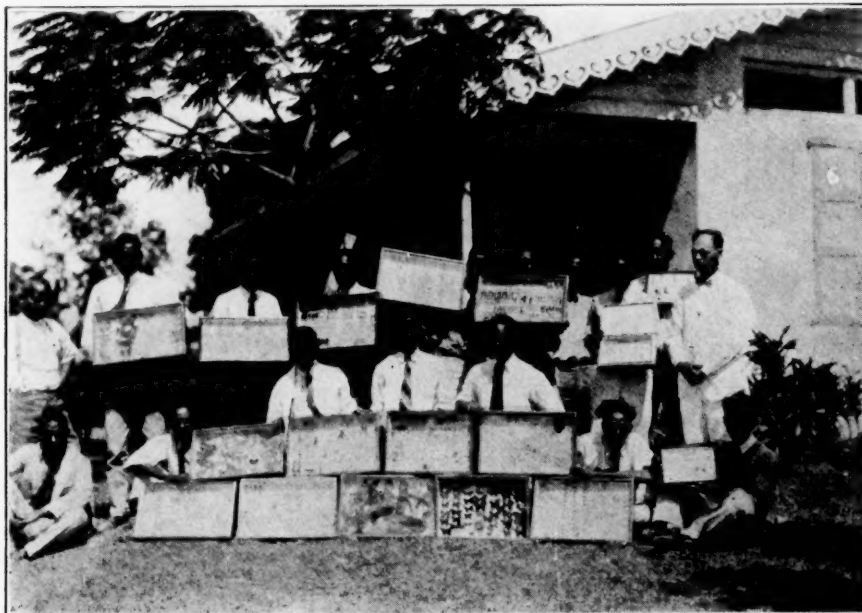
The Cadastral Survey. As outlined in my report for last year, the Haitian Government decided to bring to Haiti one well qualified in the preparation of land legislation in Latin-American countries, with the view of the early preparation and enactment of pertinent legislation. Accordingly, Judge R. C. Round, who had had wide experience in such work and was highly recommended, came to Haiti on the request of the Haitian Government and drafted the required laws and projects.

Unfortunately, these well thought out plans did not meet with the entire



MILITARY EDUCATION

Students at the Government Military School in Port-au-Prince, Haiti, Conducted under the Supervision of Marine Officers.



AGRICULTURAL EDUCATION

Students at the Agricultural School, Damien, Haiti, Exhibiting Specimens of Animal and Insect Pests Which They Have Collected and Mounted.



Official photo by D. G. T. P. (Republic of Haiti)

Rough traveling in Haiti. The primitive condition of Haitian roads may be judged by this photo of the St. Marc-Gonaïves Road before it was improved.



Official photo by D. G. T. P. (Republic of Haiti)

A result of modern engineering and enterprise. The St. Marc-Gonaïves Road in Haiti after improvements completed in 1928.

approbation of the Haitian Government, but it is anticipated that during the coming year, certain changes can be made that will overcome all objections and that this much-needed legislation can be enacted into law.

National Elections. On October 5, 1929, President Borno addressed the following letter to all the Prefects of the Republic:

"Mr. Prefect:

"In my message addressed to the Council of State in April of the past year, I did not hesitate to envisage as a possibility in 1930, the eventuality of the functioning of the Legislative Chambers; but I, in common with the whole country, had a right to expect that the wisdom of the opposition would have helped me thus to hasten the hour when it would appear possible for the President of the Republic to exercise the important prerogative entrusted to his patriotism, to his judgment, to his conscience.

"A vain hope! In the opposition groups, blinded politicians condemned to remain the slaves of their passions, have continued to travesty the most praiseworthy initiatives of the Government, and have created by their machinations in impressionable and credulous 'milieux', a dangerous state of mind favorable to the worst impulses of disorder.

"Faced with such a situation, my imperative duty is to consider solely, as ever, the highest interests of the Republic and to decide that the elections of January 10, 1930, will be exclusively communal.

"I am absolutely indifferent to the shouts and hypocritical declamations of the opportunist demagogues who imagine that they can still deceive the people, and have been so outrageously bold as to pretend to speak in their name after having in the past been the real despoilers of people.

"I count upon your enlightened patriotism, Mr. Prefect, to cause my decision to be respected throughout your entire district.

"With the assurances of my highest consideration,

"BORNO."

This action on the part of President Borno definitely settled the much-mooted question as to whether or not national elections for senators and deputies would be held on January 10, 1930.

New Crops. Naturally, every effort is being made by the Haitian Government to introduce new crops and increase production. With this end in view, a Department of Markets was formed and immediate efforts are being directed toward increasing the production of corn. This product grows luxuriously in Haiti and requires but little cultivation and in addition there is an assured sale for it at a fair price.

While the main efforts of the Haitian Government are being directed toward increasing the production of corn, efforts also are being made along other lines not only to diversify crops but to establish industries. Haitian honey, for example, can be produced in quantity and is of an especially fine flavor. In the past, however, sufficient attention in producing and shipping has not been paid to cleanliness.

The sisal plantations which, as a result of the demonstration work of the Service Technique were established in Haiti a few years ago, are being developed along well-thought-out lines and are certain to make Haiti one of the sisal producing countries of the world. One of these plantations forwarded its first shipment of sisal shortly before the end of the year. It is understood that the grade of sisal being produced is of the highest quality.

Negotiable Instrument Law. A negotiable instrument law is obviously much needed, but although such a law has been under consideration by the Haitian Government for some years, no action has been taken with a view to placing it before the Legislative Body.

Economy. During the past year every effort has been made to effect economies in the various departments under the supervision of Treaty Officials. Treaty Officials have been instructed that consistent with efficiency, expenditures in their departments must be reduced to a minimum. A careful supervision by the Financial Adviser will assure the desired control.

Civil Service. One of the first questions that arises in the mind of a student of Haitian Affairs is why a Civil Service System has not been established in Haiti. It would undoubtedly be of tremendous advantage to eliminate politics as far as possible from government positions. However, in the early stages of the rehabilitation work, it was most important that the heads of organizations be left a free hand to promote, dismiss, or change the work of any member of their organization. A certain amount of stability, as a consequence of this action has been attained and it would appear that the time is now ripe for the establishment of a Civil Service System.

Students' Strike and Declaration of Martial Law. The "students' strike" starting in November, the ensuing disorders of which it was the ostensible cause, aroused considerable comment in the American and other foreign press which, in general, ascribed to the incident an importance it did not intrinsically possess. It will be discussed in some detail here, although in origin it was a petty students' affair, seized upon by disgruntled politicians—the "outs"—as an opportunity for a demonstration against the Government and, they hoped,—in accordance with the unfortunate, previous tradition of the country,—for a revolution. The affair was a series of local disorders engaged in by a minority in a few towns. This was the third attempt, within a year, of opposition politicians to foment general disorder by a virulent campaign in their press. The tobacco and alcohol excise taxes and the Coffee Standardization Act furnished the other two occasions. They were unsuccessful. The

Students' Strike disorders were utterly unsupported, almost unknown and completely uninteresting to the passive, politically inarticulate Haitian peasants forming nine-tenths of the population who in recent years, for the first time in their history, had been free from war, tyranny, graft and exploitation. Only in the vicinity of Aux Cayes were agitators able to play upon the ignorance of a mob containing some peasants and among the causes of that outbreak were liquor, hatred of the town and the expectation of loot.

As described in this report, one of the main purposes for which the Service Technique was called into being by the Haitian Government in 1924 was to start a system of agricultural-vocational education. There were then no teachers available for the rural farm schools contemplated. In the beginning it was impossible to find among the agricultural population with its 99 per cent. illiteracy, sufficient candidates having had the necessary elementary schooling to enable them to take normal training. Accordingly, a normal school was started at Damien. To make a start, the majority had to be recruited in the towns among the small minority—the "elite"—having had access to secondary education. In order to stimulate student enrollment, a total sum of \$10,000 per annum was allotted as scholarships in addition to free tuition. For the small initial class the scholarships averaged around \$15 a month and were sufficient to live on. It was realized that the system of recruiting from the towns and of granting scholarships was objectionable from many points of view, but the only alternative was the indefinite postponement of this needed work or the bringing in of sufficient foreign instructors for the schools throughout the country which would have occasioned an expense beyond the ability of the state to bear. This difficult decision has been justified for, prior to the students' strike, 400 teachers, largely of urban origin, were graduated, instilled with interest in this educational departure, novel for Haiti, and are giving generally effective service in the rural farm schools. Scholarships would hardly be awarded on any other basis than that of grades and were naturally won by the town students with their better preparatory instruction. The school was, however, steadily increasing its enrollment from the rural districts by weakening the entrance requirements for rural applicants in the knowledge that these students, because of their agricultural background, could best approach, instruct and elevate the younger rural generation. To reach and encourage this class, which as a whole could hardly hope to win many scholarships, the authorities decided to take \$2,000 of the \$10,000 heretofore allotted and to devote that amount for remuneration of students willing to do practical farm labor on the Damien demonstration farm and experiment station at Damien. This entailed, naturally, a reduction in the individual scholarships held by the "town students." The individual scholarships had previously suffered decrease as student enrollment and applications and interest in the new career increased. This change was welcomed by the rural students. It was fought by the urban students since manual labor is held in almost complete disesteem in the towns.

The economic condition of the agricultural laborer and manual worker in Haiti has been so abject that a positive prejudice against toil has been created. It had never been the way to riches in the Republic. Previous higher education had been almost exclusively medical, legal or literary and had operated to turn the educated away from productive activity. It was recognized by the Government that a change in this attitude was pre-requisite to the economic advance of the country.

This was the cause of the student strike on October 31st. In spite of the unjustified complaints and demands of the students the Government adopted a policy of conciliation, naming a committee of inquiry.

This policy was inspired by a generous understanding that many of the striking students found it difficult to attend school without the help of scholarships and by a desire not to alienate their sympathies or lose the services of future teachers in the scantily-staffed cause of popular education.

To this point the affair had been a students' strike, similar to the students' strikes which have occurred in various countries since the World War. The affair might have terminated but at this juncture occurred the immixture of the opposition politicians and their press. Left to themselves the Damien students would have eventually accepted the Government concessions increasing the scholarship fund to \$15,000 and the number of scholarships from 66 to 100.

It is pointed out that due to various causes, historical, geographical (the mountainous configuration of the country, consequent difficulties of communication and hardships of establishing a strong central government), the poverty, gullibility and dense ignorance of the masses, Haiti's history has been that of a series of almost invariably successful revolutions, and a revolutionary mentality has been bred. These revolutions, however, have always been conducted by the small literate minority of the towns—the so-called "elite". Never since Dessalines has a revolutionary movement originated with the people or have administrations changed as a result of the protest of the masses against their oppressive rulers.

The school boys' episode offered, judging from previous national history, an opportunity for revolution. The tone of the articles in the opposition papers concerning the striking students became fulsomely laudatory, producing an exalted, unreasonable attitude among the strikers. Subtle but definite incitations to disorder were daily printed. A substantial fund is known to have been raised to provide free meals for the strikers. Emissaries were set at work by the politicians in the other schools. Intimidation was employed against students unwilling to strike and the prospect of excitement, publicity and a holiday had its influence on others. Parents of the "out" group incited their children. Other schools joined the strike.

Adroit propaganda was used concerning the wages paid American employees—necessarily somewhat higher because of expensively obtained pro-

fessional education, the different wage scale of the United States, the impermanence of their employment here and because, in spite of the consistent policy of training Haitians, a sufficient number of experienced, suitably instructed men had not yet been developed to take over higher posts in the Treaty Services. Efforts were made to undermine the loyalty of the Garde d'Haiti, the police force of the country. Subordinate employees were eventually persuaded to strike in the customs house at Port-au-Prince, in the customs control office, and in the Service Technique. The employees in the Public Works and Public Health Department and the Garde and in all divisions and customs houses of the General Receiver, except as stated, remained loyal. With the students and customs clerks of the Port-au-Prince Customs House running through the streets, the mob element, always large and dangerous by reason of the general illiteracy and low economic status of the population, began to take part. The stage was set for rioting, looting and bloodshed. Martial law was, therefore, made effective on December 4th. Patrols were thrown out in Port-au-Prince and Cape Haitian. A curfew order was published, not a great hardship in this country of "early to bed and early to rise". Almost immediately these two chief cities became calm, showing the lack of real popular interest in the affair. A few arrests of leaders and violators of the curfew order were made. In some of the outlying towns, where no military patrolling was enforced, the agitators attempted to promote disorders for a short time. Only in Aux Cayes did any serious trouble occur.

The Aux Cayes Incident. There, emissaries from Port-au-Prince had persuaded and organized a parade and strike of primary and secondary schools. Had the children been left alone, there would have been no strike as there was absolutely no dissatisfaction with school condition at Cayes. The children's strike started in orderly fashion, but a number of irresponsible hoodlums joined in and caused commotion. The stevedores' strike which followed was the result of political agitators who employed intimidation and persuasion to accomplish this result.

Agitators then proceeded to work on the peasants in the district surrounding Aux Cayes. Unfortunately, conditions were temporarily favorable to their designs there and the gullibility and ignorance of the peasants was such as to persuade them to listen to the agitators. Cane growing is one of the principal crops of that district. The cane is sold to local distillers and the local distillers had been compelled to meet the recent competition of a 9,000 gallon per day still at Port-au-Prince, now manufacturing forty per cent. of the entire consumption of the country and selling alcohol at a fixed price of sixty cents per gallon tax paid. The local distillers unable to meet this competition by passing the tax on to the consumer, retaliated by offering lower prices to the peasant cane grower, causing serious dissatisfaction among the growers.

Rumors that the reduction in coffee prices which occurred as a result of the Brazilian situation were due to the Haitian Standardization Act, were spread by "out" politicians to inflame the peasants.

Another cause of unrest was the action taken by the Haitian Government to prevent seasonal emigration of laborers. But 3100 laborers were permitted to emigrate during the year as compared with more than twenty thousand in other periods. These seasonal emigrants came to an important extent from the Cayes district, and the sums brought back by them from Cuba, and Santo Domingo, were important to the poverty stricken mass. The peasant did not understand either the new laws or the causes of the drop in coffee prices. Any change in their conditions of life or production are regarded at the outset with intense suspicion by these illiterate, primitive and, hence, conservative folk. A condition of discontent was temporarily, therefore, available for the agitators. But the traditional antagonism of the country for the town, the hopes of looting, the supplying of liquor, the love of excitement, and their acceptance of the leaders' assurance that no real danger was involved, were the factors which started a mob of about fifteen hundred toward Aux Cayes. Halted by a group of twenty United States Marines, they first retired, but their leaders reformed them and advanced. Over an hour's parley ensued and then they tried to rush the Marines. Firing over their heads failed to stop them; they stoned the little detachment, and finally effective fire was employed, killing six. The mob broke, leaving twenty-eight wounded. Four of these wounded later died. All of these wounded were transported to the hospital and given thorough treatment and care. In this contact, the Marines used the greatest restraint and only employed fire for effect when it became absolutely necessary. The Cayes episode was the only one with serious consequences. The ten deaths were inevitable in order to prevent the much heavier loss of life, crime, and destruction that would have ensued had the mob been allowed to wreak its will in Aux Cayes.

Attempts to stimulate disorders in a few other localities, where Port-au-Prince agitators had penetrated, were quickly stooped with a handful of arrests. In no part of the Republic was there any dissatisfaction or disorder except where instigated by Port-au-Prince emissaries.

The declaration of martial law meant in effect the patrolling of the streets, the forbidding of assemblies, the discontinuance of subversive and inciting articles in the press, a curfew order in the two chief cities of the Republic. It did not really impinge on the liberty of the majority of the inhabitants of localities where it was enforced. It was progressively relaxed after the first two or three days and discontinued entirely twelve days after, on December 16th. The Haitian Government immediately came out with a proclamation authorizing and asserting the necessity of the declaration of martial law.

The United States Marines acted as a reserve and adjunct to the regular

police force—the Garde d'Haiti, which functioned well and with loyalty during the disturbance. But the Garde is a relatively new, inexperienced unit. It was subjected to great and clever pressure. It was its first experience in public rioting. It was numerically weak in view of national conditions and its manifold duties.

Had previous Haitian history permitted the establishment of an adequate police force of long experience and tradition, or had the Haitian Government been able completely to reorganize the courts so that offenders against public order would have had prompt justice instead of acquittal meted out to them, martial law and the support of the American Marines would not have been necessary in this instance. However, until the mentality of the people becomes accustomed to stable government, as long as ignorance and poverty of the people furnishes a revolutionary field for irresponsible politicians, as long as a large irresponsible mob element of the population exists, as long as cheap alcohol can be obtained for this "hoodlum fringe" any police force in Haiti must be ready to act promptly and decisively and, until the courts are reorganized, to do their share in preserving public order, extraordinary measures must occasionally be taken.

This is the lesson of the strike, an event that gained importance only because of the death of ten members of a mob in Aux Cayes, an extremely sad result, but unavoidable to prevent further deaths. The further lesson is the unwelcome one that revolutionary mentality is not dead in Haiti. It has been weakened and will weaken further as the lot and intelligence of the common people—already improved—gradually approaches standards of more fortunate countries. Should it further evidence itself, the Garde d'Haiti, fortified by the incidents just recited, will be even better able to handle it. For the nonce, however, the Garde, under present circumstances of organization and strength, should have behind it a reserve, a feeling of support.

At this writing, all schools have reopened with their former students with the exception of Damien. Some of the Damien students have returned and the places of the others have been filled by new applicants. More applications have been received than vacancies exist. The strike disorders were dealt with by President Borno in his proclamation of December 9, 1929, which reads:

PROCLAMATION

BORNO

President of the Republic

To the Haitian People

Fellow citizens:

Once more the ambitious impenitents have accomplished their criminal designs. They knew perfectly well the Government of the United States was obliged by formal treaty to maintain public order in Haiti. They knew perfectly well the American military occupation has, according to international law, its sole and only justification in assuring the

loyal execution of that contractual obligation. They knew this. But they foolishly imagined the Government of the United States would betray its trust and favor their plans for disorder, their dreams of anarchy. Foolishly, they imagined the American forces of occupation would become accomplices of their machinations. Thus, with the fixed intention of embarrassing and annihilating the constitutional Government of the Republic in order to place it in a situation where it would be forced to resign, they have fomented throughout the country a political agitation, camouflaged under the pretended student demands. Exploiting by its equivocal maneuvers the ardent and generous sentiments of youth, they have succeeded in casting into the streets the young boys and girls of the schools, thus disorganizing education, thus compromising the future of this entire body of young people and children.

In this midst of the student turbulence, the Government has maintained the greatest calm and manifested the highest sentiments of benevolence.

Always dominated by consideration for the public welfare and regard for the interests of the young people, it has on two occasions accorded the students the greatest concessions; but each time the leaders of the underground politics have raised absurd difficulties and placed obstacles in the way of the good intentions of the students.

And in the meantime, the secret agents of these politicians, employed in the public services, in the customs, in the internal revenue service, have actively instigated demands, in appearance purely administrative, in order to bring about a desertion of the offices and the complete paralyzation of the fiscal services of the State.

It was in the face of the extension of these insidious acts, confronted by the partial realization of their plans, confronted by the alarming attitude of the elements of disorder who audaciously began to take possession of the streets of Port-au-Prince, Cape Haitian, Jacmel, Aux Cayes, Gonaives, that the Chief of the American forces, as equally responsible for the public safety as the Haitian Government itself, intervened and put into effect martial law.

It is clearly evident that it is the political opposition which provoked and justified this measure for the defense of public order, which had been dangerously menaced.

For the energetic measures of repression which may thereby follow, it is, therefore, the leaders of the Opposition who must, before the Nation and History, assume the grave responsibility.

In any case and under whatever circumstances, the Government will fulfill to the end its imperious duty of safeguarding public peace.

It has the right to count, and it firmly counts on the sincere aid of every good citizen."

UNITED STATES FORCES

During the past year, the United States Forces in Haiti have been maintained at a skeleton brigade of United States Marines and a mine sweeper of 950 tons displacement.

Colonel Richard M. Cutts assumed command of the brigade on June 25th, 1929, relieving Colonel L. M. Gulick.

On December 4, 1929, in view of the disorders that occurred in Port-au-Prince and other places in Haiti, and in accordance with the obligations of the Treaty of 1915, it became necessary to again place in operation Martial Law, and to impose certain restrictions. As soon as order was restored and conditions permitted these restrictions were removed and the brigade resumed its normal passive function on December 17, 1929.

Considering the conditions that prevailed when Martial Law was placed in operation on December 4, 1929, it reflects the highest credit on the officers and the men of the brigade as well as those of the Garde d'Haiti, that in the short period of two weeks order could be restored throughout the entire country. The prompt and effective measures that were taken unquestionably snuffed out the flame that might have easily developed into a conflagration and resulted in much bloodshed and loss of life.

During the operation of Martial Law, no offenses were committed of such a serious nature as to warrant trial by provost courts. This fact, together with the efficient manner in which each new situation was met, demonstrated the tact and ability of the military leaders. The Garde operated as a part of the brigade with efficiency and perfect cooperation.

GARDE OF HAITI

The primary object of the Garde d'Haiti is the maintenance of law and order. But its functions as the military and police force of the Republic have been greatly expanded to include, among other things, the supervision of communal finances and administration, the administration of the coast guard and military communications utilized also for civil purposes.

The achievements of this new organization in maintaining with the backing of the United States Marines, law and order, uninterrupted, except for the banditism of 1919-1920 and the abortive disorders of November and December, 1929, for a period of fourteen years, is remarkable when viewed against the background of previous conditions in the Republic.

Prior to 1915, the great mass of Haitians were at the mercy of a rapacious military oligarchy. There was real danger in producing or owning anything beyond the merest necessities. The peasant feared to come to the towns lest he be seized and forcibly inducted without law into the army. The produce was brought into the cities by peasant women who frequently saw their wares taken from them by the almost unpaid soldiers.

The Haitian army before 1915 consisted of thirty-eight (38) line and four (4) artillery regiments of a total paper strength of over 9,000, a gendarmerie of over 1,800, plus four regiments of the President's guard, the whole officered by 308 generals and 50 colonels, not to mention the honorary generals created by the President pro tem. among his friends. The pay of the private was twenty cents per month, plus eighty cents for rations, none of which was ever received, with the exception of a few troops selected for honor duty. The soldiers' pay, plus appropriations for medical service and uniforms, went into the pockets of the generals. The prisons conducted by the gendarmerie of that day were indescribable places of filth and disease unfit for human habitation. The former method of recruiting without legal basis was performed to line the pockets of the generals who sent their soldiers out to impress all young men, whether of military age or not, to join their army. Those who would pay a bribe of around \$2.00 were released from serving and members of the "elite" families were allowed to engage in the fire brigade or the parade companies. The others were forced into service. With these conditions obtaining, it is small wonder that revolutions were never suppressed by the standing army, that many of the recruits for these insurrections came from the army itself and that oppressive lawlessness was the rule.

Today, peace obtains, although the Garde d'Haiti is less than a fourth of the numerical strength of the old forces. An officers' school has been created and a military career is one which a self-respecting Haitian can adopt. The men are modernly housed, equipped, uniformed, educated if illiterate, and paid \$10.00 per month, a suitable pay for Haitian conditions. Prisons are immaculately clean and sanitary; buildings have workshop facilities. Graft has been eliminated. A modern accounting and purchasing system has been introduced which has effected important economies. Due to supervision by district commanders Haitian communal revenues, previously dissipated in graft and unwise expenditures, have greatly increased, and communal administration strengthened. A reorganized medical department has more than halved the death and disease rate among personnel and prisoners. In the first four years of the Occupation, the Garde also carried over an important road-building program.

These achievements have been accomplished in the face of the handicaps of the mentality and tradition of the people, in the face of the frequent non-cooperation and at times actual hostility of the courts. For the first time in their history the masses of the Haitian people have been really free and protected in their lives and callings.

THE GARDE AND THE ATTEMPTED GENERAL STRIKE

The students' strike, and attempted general strike with attendant disorders, provided the Garde with its severest test since the banditry operations in 1919-20. In a sense, the test was more severe than in those latter operations. The Garde was subjected to an intense and adroit propaganda. The

"out" politicians engineering these disorders confidently counted on the Garde either joining forces with the manifestants or remaining passive.

The event was of most valuable experience for the organization. The fact that the Garde so well acquitted itself and remained loyal to a man in these disturbances, is a milestone in Haiti's progress. For almost the first time in Haitian history, the armed forces remained loyal in face of an energetic, if local and artificial, revolutionary movement.

A policy of putting the Garde in the forefront in all these disorders was maintained. United States Marines acted as a support of the Garde and as a necessary reserve. The Garde emerged with even stronger efficiency and morale from this experience.

ORGANIZATION AND DUTIES OF THE GARDE

The Garde d'Haiti performs all military and police functions of the Republic with its area of 10,200 square miles and its population of approximately two million, its rugged and extensive coast line, and mountain frontier of one hundred seventy-five miles. There is an average of one Garde for each 3.4 square miles, and to some 690 inhabitants. In addition to its specifically police and military duties, the Garde maintains and operates all navigational aids in Haitian waters; the registration and licensing of motor vehicles and traffic controls; the care and guard of all prisoners and to a great extent the insane of the Republic. An idea of the highly varied activities performed by the Garde can best be illustrated by visualizing the daily routine of a composite district of the twenty-one districts in the Republic. This district would be commanded by either an American or Haitian captain of the Garde and manned by a force of five officers and one hundred men. It would include three sub-districts under command of American or Haitian lieutenants, and each sub-district would be composed of seven outposts, each manned by three or four privates under a non-commissioned officer. Each district would also have a small sanitary detachment of the Garde attached to it.

The Garde's day, in this composite district, begins at 5:45 A. M., performing all police and military functions in an area of forty square miles of rugged sea coast, mountains rising from three to six thousand feet, a stretch of wild and sparsely populated frontier offering an effective lair for smuggling bands, fertile valleys and broad plains, stretches of cactus spiked desert land and almost primitive jungle, forming the formidable amphitheatre of the districts' activities.

Their day begins with the functions of messing and physical drills, color ceremonies, arms drill, schools for illiterates and non-commissioned officers. Patrols move out on the alert for smuggling or disorder. The Garde supervises the open markets held throughout the districts, towns, and villages on specific days. In the larger towns controlled registration and licensing of motor traffic is carried out; sale, importation and licensing of firearms and amuse-

ments constitute a steady duty. In isolated interior regions, the Garde and peasant labor must construct and maintain trails, serving not merely military communication, but aiding the peasants in their travel to markets. With this goes the supervision and construction of a large mileage of wire communications.

Its officers have been trained in the construction of the modern barracks of the smaller type, while the men trained in masonry and carpentry push the work ahead with trucks or pack animals. In the erection of these barracks, lime, stone, roofing, and other material are transferred by the Garde over many miles of difficult roads and mountain trails. A column is always ready on short notice to move by truck or foot to handle any incipient disorder that may arise. But from 1921, until December, 1929, there was no break in the peaceful routine of the organization.

Traffic counts are made on principal roads. It operates to supplement the restricted investigating personnel of the other Treaty departments and frequently acts as paymaster in place of these services. It furnishes fire protection, police and traffic control, for the towns in the districts. It maintains radio receivers and public address equipment in all the seaports.

The district commander acts as advisor in all matters of communal administration, such as communal budgets, sanitation, streets, parks, and bridges. In the lower courts of the villages, non-commissioned officers assist in the administration of law and justice. A light goes out on the coast or a buoy goes adrift and the district commander immediately informs the coast guard.

Routine inspections take the district commanders and his aides into every corner of their little self-contained provinces. Emergency missions, such as arise when there are rumors of a human or animal epidemic, may start him suddenly on horseback or muleback, over difficult trails, fording swollen rivers, or by automobile or motor launch along the coast, well named the "Coast of Iron". In addition to the duties above-outlined, their administrative activities and duties are frequently performed under most trying weather conditions, such as the tropical heat of the Haitian summer and the torrential downpours of the rainy season. The Garde officers must know not merely French, but the Cerole of the hills.

Personnel. The enlisted strength of the Garde was increased from 2,537 to 2,622 during the year. The total strength of the organization, including the auxiliaries of the Coast Guard, rural police, and palace band, reaches a total of 3,460.

In conformity with the definite policy of gradual preparation of Haitian officers, Haitian officers in the Garde were increased from five per cent. in 1917, to nineteen per cent. in 1922, to thirty-five per cent. in 1928, and to thirty-six and forty-two one hundredths (36.42%) per cent. at the end of the fiscal year. Of the fifteen outlying districts, four are now entirely officered

and manned from Haitian sources. During the disturbances in the latter part of the year, the Haitian officers evinced good progress in their ability to command. The military school staff,—seventy-five per cent. Haitian—graduated seventeen aspirant officers at the end of a year's work.

Communications. At the end of the year, a total of 309.5 miles of telephone lines, nine airplane landing fields, constructed by its own labor, and the maintenance and extension of a considerable mileage of trails were under the administration of the Garde.

Police Services, Fire and Traffic Control. There was a greatly increased demand on the purely police functions of the Garde during the year. Fire-fighting facilities were increased in Port-au-Prince and the capital city, now for the first time, is approaching adequate fire protection. Installation of modern storage facilities for inflammable liquids in bulk beyond the city limits in the capital were completed during the year, substantially reducing the fire menace. In Cape Haitian and other cities, fire fighting equipment, fire zoning, and storage facilities were improved. The reduction in fire losses compared with 1928 was \$384,325.00.

Registration of motor vehicles increased from 2,589 in 1928, to 2,839 during the past year, and this increase was met by a campaign of enforcement in traffic regulations in all centers. In Port-au-Prince alone, 1,001 traffic violations were recorded as compared with 461 in 1928. By stricter application of the laws governing their possession and by confiscations, a reduction of 388 in the number of privately owned firearms in the Republic was accomplished.

Communal Administration. One of the serious Haitian problems is that of communal administration. Commanders of the Garde have the title of communal Advisers and have charge of the important duties of collecting and distributing communal revenues and have the surveillance and control of all financial operations of the commune. Unfortunately, present laws do not provide advisers' real control, and as a result, in many communes there have been illegal, dishonest or unwise expenditures of public funds. These incidents have been promptly reported. Legislation correcting this situation is urgently needed.

Marksmanship. Although the annual rifle matches scheduled for December had to be postponed, departmental and district competitions showed that the marksmanship acquired by the Garde is up to its former excellent standards. With the normal handicap of old rifles, accentuated by the passage of another year an average of 69.40 percentage of qualifications was made. The 1928 record was 70.08 per cent.

Construction. A comprehensive building program for the Garde is now in its fourth year. In 1928, twenty-four modified and eight outpost buildings were constructed by Garde and prison labor. The completion by the Public

Works department of one two-story and three one-story district headquarters, gave the Garde more than ninety per cent. of modern and adequate buildings.

Coast Guard. Despite the lack of a suitable lighthouse tender, the coast guard department of the Garde d'Haiti successfully maintained navigational aids in Haitian waters, serving fifteen lighthouses and maintaining the buoyage system intact. Although small gasoline launches with inadequate lifting machinery were employed, all defects reported were repaired within forty-eight hours. The Coast Guard also surveyed an area four miles square at Caracol Bay, locating and buoying an excellent shipping channel.

PUBLIC FINANCES, FOREIGN TRADE, AND THE SERVICE OF THE
FINANCIAL ADVISER-GENERAL RECEIVER

Financial Adviser-General Receiver. The Treaty concluded between the United States and Haiti on September 16, 1915, stated that the Government of the United States "will, by its good offices, aid * * * in the establishment of the finances of Haiti on a firm and solid basis." This provision was the basis for the creation of the office of the Financial Adviser-General Receiver with its manifold functions in the service of the rehabilitation of public finances, the promotion of Haiti's commerce and the general economic welfare of the Republic. To comprehend the activities and accomplishments of this new unit of the Haitian Government, the chaotic condition of Haitian finances at the time of the inception of the Financial Adviser's service must be understood. The country, in 1915, was practically bankrupt. In that year, the next public debt totalled some \$30,772,000, of which over \$4,000,000 represented arrears in interest. Amortization in the instance of one bond issue was twelve years in arrears. In October, 1916, some \$2,997,570.00 or three-fourths of the revenues of the annual receipts estimated at \$4,043,000.00, was necessary for debt service, five per cent. for the fiscal and collection service rendered by the Financial Adviser-General Receiver's organization and nearly twenty per cent. for the upkeep of the military and police force, the Garde d'Haiti, leaving only \$68,820.00 to take care of the other expenses of the Government, amounting to some \$2,340,000 per annum. Heavy bank borrowing at ruinous rates of interest was the means by which previous Governments had carried on. Salaries to government employees were insufficient and months in arrears, government auditing was inefficient, the customs tariff was antiquated, government revenues depended almost entirely on customs duties, especially on the coffee export tax, and fluctuated with the coffee crop. The currency was depreciated and subject to violent variations. No effective measures to establish a real revenue from internal sources had been taken and customs collections were but a part of what they should have been, due to corruption and inefficiency.

At the end of the fiscal year, 1928-29, the Government of Haiti had an unobligated cash balance of more than \$4,000,000. Bonded indebtedness had

decreased from \$30,772,000 to \$17,735,479, in spite of the contraction of new loans, 1922, 1923, and 1924, totalling \$22,695,000 utilized chiefly to refund previous bonded indebtedness and satisfy claims against the Government, but also to effect material improvements.

Government revenues have more than doubled, chiefly through better collections and yields of existing taxes enabling the various departments of the Government to undertake the greatest program for public welfare the country has ever seen. Internal revenue has been increased, yielding over \$1,200,000 during the year just finished, or more than one-fourth the total receipts of thirteen years ago and further important increases are forecast. A sound currency has been achieved.

PROBLEMS CONFRONTING THE SERVICE OF THE FINANCIAL ADVISER

The Haitian Government originally depended on customs revenue for income. Twenty per cent. of Haiti's population consists of ignorant peasants. Direct taxation is extremely difficult to enforce on such people. There are neither proper land laws, land survey maps, registration offices, nor an adequate system of settling titles. Therefore, the imposition of a land tax lies in the future. Due to ignorance and primitive conservatism of this population, it is necessary to educate rather than to legislate. Therefore, moderate, balanced systems regulating incidence of taxation can only be arrived at gradually.

The second aspect of this situation covers increased and diversified production and until this is scientifically organized and accomplished, the forward movement in public finances must be extremely slow. The great hatred of and suspicion which exists between town and country complicates the situation. The Government financial program, in face of these difficulties, must be carried out with extreme skill, devotion, political wisdom, honesty and impartiality and it needs many years to its full accomplishment.

ACTIVITIES OF THE OFFICE OF THE FINANCIAL ADVISER-GENERAL RECEIVER DURING THE FISCAL YEAR 1928-29.

Despite smaller revenues due to the fact that commercial and financial conditions during the course of 1928-29 were less favorable than in the preceding fiscal period, the financial obligations of the Haitian Government were promptly fulfilled, and the unobligated cash balance of the treasury on September 30, 1929, was the highest on record.

The development of the internal revenue service designed to remove Haitian public finances from their former unsound and almost complete dependence upon the fluctuating customs revenues and specifically on the objectionable coffee export tax continued. The first year of operation of the alcohol and tobacco excise taxes brought Haiti's internal revenue from \$848,324.00 in 1927-28, to \$1,207,054, in 1928-29. Internal revenue for the

period accounted for about fifteen per cent. of total Haitian revenues as compared with eight per cent. in 1927-28. The office of the Financial Adviser-General Receiver presided a Central Commission which elaborated the Coffee Standardization Law designed to increase the demand and reputation of Haitian coffee, previously limited by the poor preparation thereof. The office took over the registration of land records and provided, for the first time since Haiti's independence, safe recording for these most important documents. Considerable progress was made during the year in clarifying the chaotic records of state domains and a considerable additional area of land was made available for rental and productive use. Administrative regulations of the customs service found to work hardships on importers were modified. Bonded warehouse facilities were established in Port-au-Prince.

The Treaty of 1915 engaged the office of the Financial Adviser-General Receiver to effect the collection of the customs revenues at a cost not to exceed five per cent. thereof. The Financial Adviser's office previously decided, however, to effect the collection at a still lower rate and offered to pay out of the "5% fund" the commission of the National Bank of Haiti amounting to one per cent. Out of the remaining four per cent. have been effected not only administration and operation, but capital expenditures for customs houses, et cetera, extremely high in view of previous ill-housing and equipment. This is a remarkable record of which the service may justly be proud. Deducting the bank's commission, which is not properly chargeable to administration costs, but including capital expenditures, the costs of collection and operation in late years in comparison with certain other tropical countries were as follows:

	1924	1925	1926	1927	1928	1929
	%	%	%	%	%	%
Haiti	5.35	3.33	3.18	6.07	3.18	4.29
Dominican Republic	-----	4.14	4.56	3.94	4.79	-----
Nicaragua	4.27	3.78	-----	-----	3.94	-----
Philippines	4.80	4.60	5.00	5.30	4.50	-----

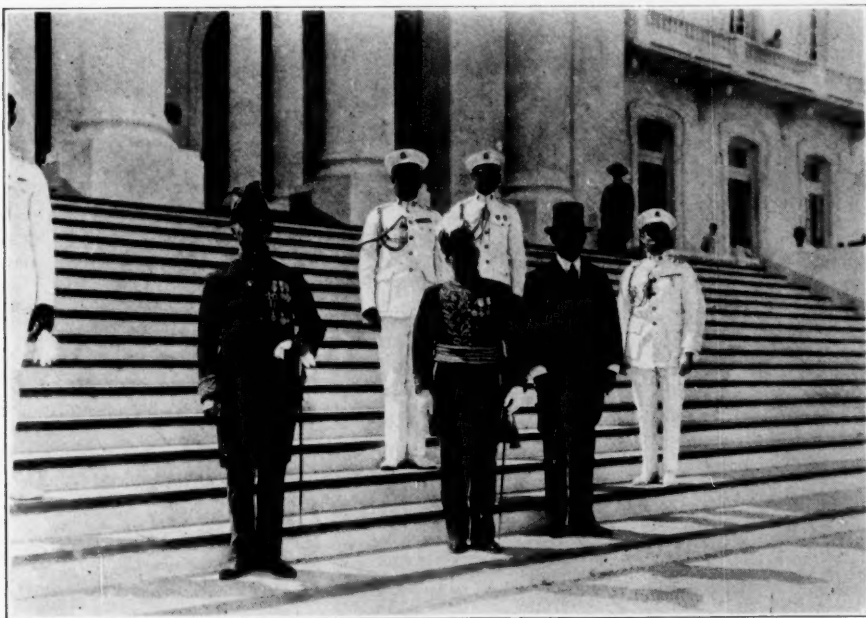
The distribution between operating costs and capital expenditures is analyzed in the following table:

	Administration and Operation	Permanent Improvements	Bank Commission	Total
	%	%	%	%
1923-24	5.35	-----	0.98	6.33
1924-25	3.17	0.16	1.84	5.17
1925-26	2.80	0.38	1.00	4.18
1926-27	3.97	2.10	1.00	6.77
1927-28	2.66	0.52	1.00	4.18
1928-29	3.62	0.67	1.00	5.29



THE PAST

The Citadel of "King Henry I" Who Ruled Northern Haiti One Hundred and Twelve Years Ago.



THE PRESENT

On the Steps of the Natiaie Palace, Port-au-Prince, Home of Haiti's President. The Central Figure in Uniform is the French Minister to Haiti. To the Right of Him Stands a Haitian Cabinet Minister.



Official photo by D. G. T. P. (Republic of Haiti)

Type of rural school used by the Haitians prior to the American occupation.

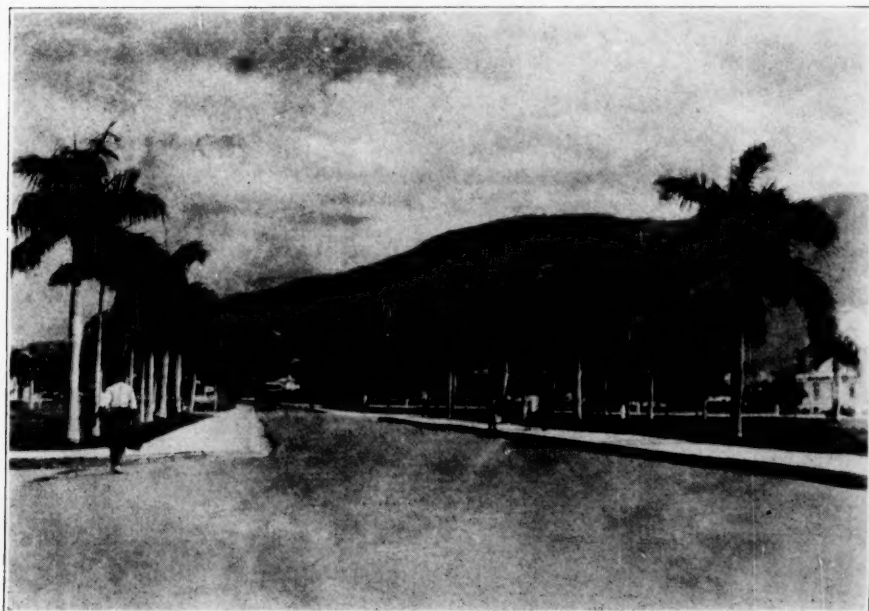


Official photo by D. G. T. P. (Republic of Haiti)

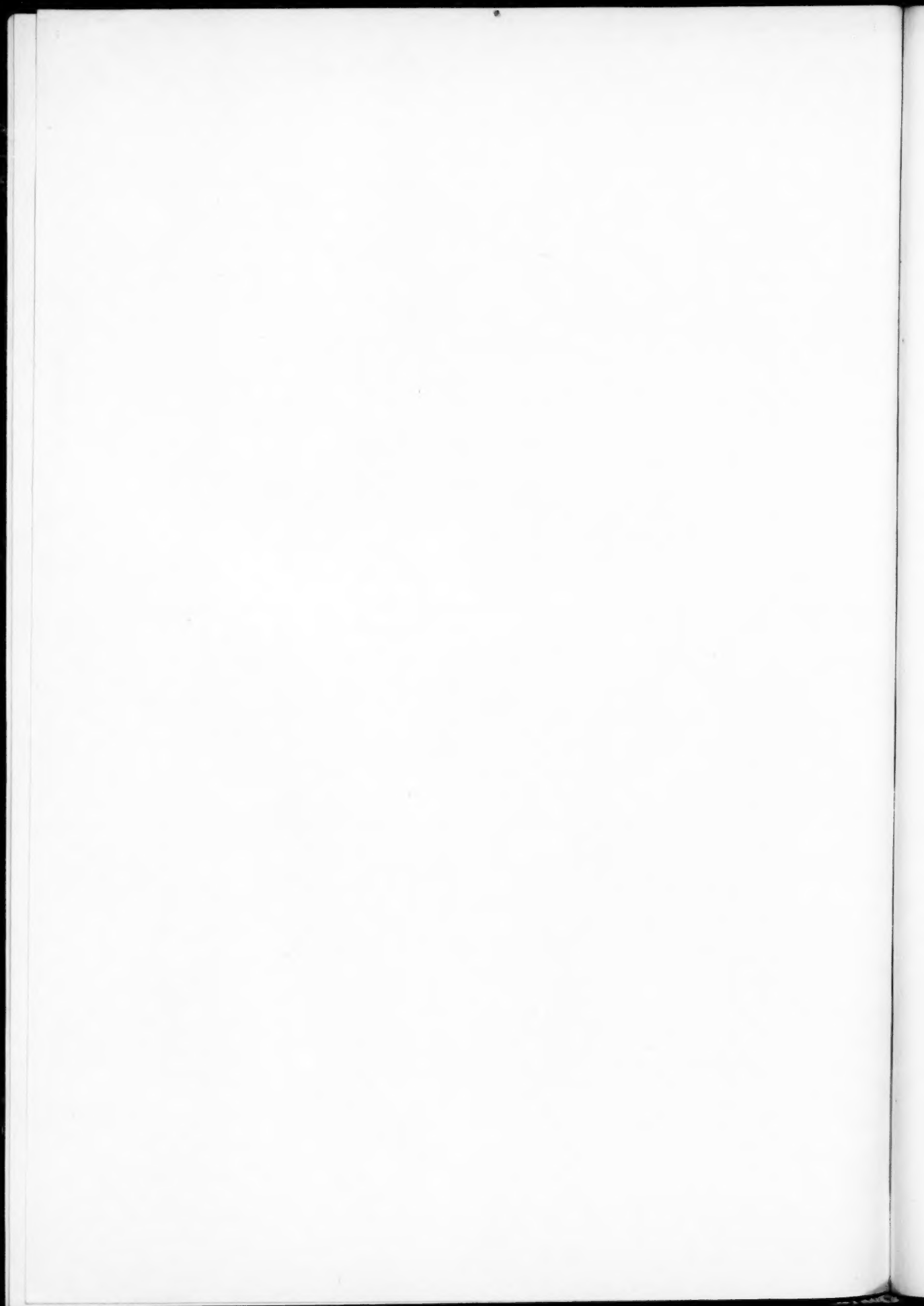
Standard type of rural farm schools, classroom and shop. This type of school is being built throughout Haiti for the education of peasants and for educational pursuits. Sixty-five such groups have been completed to date



One of the Many Country Clinics Maintained in Haiti by Medical Officers of the Navy, Where Treatment is Free to All



The New Avenue Lindbergh, Port-au-Prince, After the Famous Flyer Paid a Brief Visit to Haiti. This Is a Good Example of the Improvements Made in Street Paving During the American Occupation.



The percentage of Americans employed in the customs service of the service of the Financial Adviser-General Receiver has steadily decreased although there has been an absolute increase in their number since 1922, due to the establishment of the Internal Revenue service in August, 1924; the subsequent transfer to this latter service of the domanian services; the enactment of the excise taxes in 1928, and the standardization of exports legislation in 1929; the transfer, in 1929, to the service of the bureau of registration and extension of the scope of the auditing operations of the service.

The record in this respect is shown in the following table:

	Americans	Haitians	Total	Percentage of Americans to Total
1922	17	219	236	7.20
1923	17	230	247	6.88
1924	20	408	428	4.67
1925	19	367	386	4.92
1926	20	400	420	4.76
1927	21	395	416	5.05
1928	23	424	447	5.14
1929	26	508	534	4.87

The service now has four Haitian collectors of customs and two deputy collectors in charge of ports. There are two Haitian legal advisers in the service and twenty-two active full-time Haitian inspectors and eighty other native employees functioning as part-time inspectors.

The great majority of the employees of the Service stood firm against extreme agitation for a general strike in the December disorders. Only subordinate employees in the Port-au-Prince and in the customs control office walked out.

Internal Revenue Service. The accomplishment of this service in increasing Haiti's internal revenue from a little over \$100,000 in 1916, to \$848,000 in 1928, and to \$1,207,000.00 in 1929, has been mentioned. Last year's increase was due to the inauguration of the alcohol and tobacco excise taxes. The problem in connection with collections of these taxes, absolutely novel in Haiti, were met with greater success than had been anticipated. In spite of the necessarily heavier expenditures attending the introduction of the new taxes and the charges occasioned by the transfer of the registration service, the Internal Revenue kept well within its operating allowance of fifteen per cent. of the revenue collected.

AUDITING AND ACCOUNTING

The year saw the introduction in the accounting system of the functional classification of expenditures and redistribution of expenditures by objects. Modern installations to facilitate preparation of records, improvements of

the control over expenditures and measures to protect all records from loss were made during the year. The auditing accommodations of the office were extended and arrangements were made for a complete audit of all governmental accounts by representatives of the office of the Comptroller of the United States Government. This audit took place in October and November, 1929, and will be continued annually hereafter.

GOVERNMENT FINANCES

The Financial Adviser-General Receiver reports that the total revenue receipts of the Haitian Government for the fiscal year 1928-29, were \$8,504,-305.00, or 15.66% less than in 1927-28, the record year. Total customs receipts amounting to \$7,049,530.00 were 21.81% less than the record customs revenues in 1927-1928.

On the other hand, expenditures increased 7.66% to a total of \$8,823,-900.00 in 1929, as against \$8,195,580.00 in 1927-28. The increased expenditures were caused by larger disbursements by the department of Public Works, the Service Technique and the Department of Hygiene. The Garde d'Haiti and the departments of foreign relations as well as Agriculture and Labor decreased their expenditures.

TREASURY POSITION

Despite the fact that expenditures from revenues exceeded revenues for the year by \$319,595.00, or 3.76%, the unobligated cash balance on September 30, 1929, was the largest on record, amounting to \$4,072,291.00. The public treasury is, therefore, in the best condition in Haitian history to meet the prospect of lower revenues expected during 1929-30, as a result of lower coffee prices. While the unobligated cash balance is at a peak sum, the total cash assets of the Government declined 4.29% during the year to a total of \$6,538,676.00.

PUBLIC DEBT

A reduction in the public debt of \$1,152,142.00 to a total indebtedness of \$17,735,479.00 was accomplished. This was a reduction of 6.10% as compared with 5.28% in 1927-28.

1930 BUDGET

The budget for the fiscal period 1929-30 was voted on July 16, 1929, forecasting a revenue of \$8,020,000.00 and expenditures of \$8,018,000. It is probable that, due to the severe economic disturbance caused by the drop in the world prices for coffee, Haiti's chief crop, the revenue will be below this estimate. At the end of the calendar year, active steps were being taken to reduce expenditures below the budget figure.

Economic Conditions. Prosperity in Haiti depends entirely on the coffee crop and prices. Coffee constitutes in value from sixty to eighty per cent. of the country's exports.

The coffee crop in the period 1928-29 was a lean one, due to unfavorable weather conditions, but prospects for the 1929-30 crop were bright. In October, 1929, however, the coffee valorization program carried on by Brazil since the World War and which has maintained prices at a high level, collapsed, and with it collapsed hopes for general prosperity for the coming year in Haiti. All advices indicate a continuance of low coffee quotations for some years to come.

But the situation is not one of despair due to the productive developments which have occurred in Haiti since 1915. The credit standing of the merchants in the banks at the close of the calendar year was in general good, and stocks of merchandise lower than at any time during the past five years. Among the productive developments which are steadily adding to Haiti's wealth may be mentioned sisal plantations, planted on land abandoned to cultivation for more than one hundred years, and which will begin exporting in quantity the coming year, bringing in several hundred thousands of dollars per annum into Haiti. Another development which is beginning to yield returns is a large pineapple plantation and canning establishment at the Cape. Due to the efforts of the offices of the High Commissioner and the Financial Adviser, an export outlet for Haitian corn has been opened by an arrangement with an American corporation. New crops are being introduced and existing crops improved, which through their export or through the reduction of imports will add riches to Haiti. The Coffee Standardization Act offers a remedy for the low differential prices previously received by Haitian growers by reason of the poor preparation of their crop.

Other projects are being studied and encouraged, which will develop unused or poorly used tracts. The establishment during the last year of direct shipping service between Galveston and Porto Rico, stopping at Haiti, and the opening up of air communication by the Pan American Airways between Haiti, Cuba, Florida, the Dominican Republic, and Porto Rico, will have some small favorable effect. Other air lines are contemplated.

Although the tourist traffic is not yet important, it is increasing. The expenditures of the United States Marine Corps Detachment is one of the few positive invisible items in Haiti's foreign trade and a stabilizing economic factor.

The situation created by the drop in coffee prices is a serious one for Haitian economy, but, it has been suggested, with a considerable show of reason, it may prove to some extent to be a blessing in disguise in accelerating the movement toward crop diversification and development of new crops which Haiti needs.

Foreign Trade. Haiti's total foreign trade declined from \$42,915,502.00 in 1927-28 to \$33,961,756.00 in 1928-29, a decrease of \$8,953,747.00, or 20.87%. Imports declined 14.87% to \$17,237,920.00, while exports declined

26.22%, to \$16,721,833.00, leaving an unfavorable trade balance of \$514,089.00. In 1927-28, there was a favorable trade balance of \$2,418,989.00.

The proportion of Haitian imports supplied by the United States declined from 75.30% of the total in 1927-28, to 69.85% in 1928-9, while France continued to be the heaviest purchaser of Haitian exports, taking 55.29%, an increase over the percentage for the previous year. Port-au-Prince, with 58.75% of total import trade for the year, continued to lead as port of entry, although its share of the import trade declined as compared with the previous year. In proportion of exports Port-au-Prince handled 18.96% of the total, which represents a decline from the 22.67% of total exports accounts accounted for at that port during 1927-28.

Foodstuffs formed 33.89%, in value, of total imports of 1928-29, as compared with 30.02% in 1927-28. This increase was largely due to destruction of edible crops by the hurricane of 1928. Imports of most other commodities declined in value, including textiles, footwear, cement, liquors, lumber, tobacco, and automotive vehicles. Exports of coffee fell off 28% in value, and 30.59% in quantity, as compared with 1927-28. Exports for the year totalled 12,590,160 kilos. There was little improvement shown in the other chief export items, with the exception of cotton and the increased shipments of that commodity were not sufficient to afford any appreciable relief from the dependence of coffee. The excess of imports over exports during the past year was paid for by a residuum of purchasing power remaining from 1927-28. This unfavorable balance of trade is considered as purely of temporary nature and warrants little concern as for 1929-30, it is conceivable that total imports will more closely correspond to export values than for several years.

PUBLIC WORKS

The achievements and importance to Haiti of the Public Works Department, with its varied program of construction and administration of essential services, can best be understood by a brief comparison of present conditions with those that faced the Department at the time of its Intervention in 1915.

At the time of the American Intervention, there was no definite organization for carrying out the few public improvements that were undertaken. A number of engineers, citizens of Haiti, were attached to the Ministry of Public Works and were assigned to particular projects in a more or less haphazard and desultory fashion.

There was no accurate system of accounting for expenditures, and the public works of the country as a whole, such as they were, were in a deplorable condition. The organization of a technical department with a proper accounting system, and an efficient professional personnel for carrying out the work of this department, was therefore of primary importance. The existing public works were few. There were practically no roads connecting

the cities and towns and as a consequence, communication was most difficult. In view of difficulty, the interior of Haiti was practically unknown to those living on the sea-coast or in the port towns. A century had passed since any extensive road building, maintenance, or repair had occurred. There were few improved city streets. Sidewalks were practically unknown. Bridges were few and dangerous to the point that the proverb "Never cross a bridge until you come to it" had been changed in Haiti to "Never cross a bridge if you can go around it." The single telephone system in Port-au-Prince had failed in 1911 and there was but a rudimentary telegraph system. The ports, storage and shipping facilities, with the exception of Port-au-Prince, were generally in bad shape and inadequate. An automobile was a thing unheard of to the majority of the population.

Today, there are nearly three thousand automobiles and numerous motor bus lines. There have been constructed 1,006 miles of roads utilizable by motor vehicles. The length of bridges has increased nearly three times to a total of 210 structures of a total span of 5,870 feet and their improvement as regards security and maintenance is equally remarkable. The peasant in many remote districts can bring or send his wares to markets, in many cases by motor bus or motor truck service. Many districts whose products were largely lost through spoilage and the inaccessibility of markets or for which the grower received a small return due to the cost and difficulty of transportation, are now selling in the consuming centers and for export, thus adding to the wealth of the inhabitants of the nation. Of political and educative value, is the fact that the peasant can and is beginning to come to the cities where he comes into contact with ideas, a higher material civilization.

A modern telephone system, automatic in the cities of Port-au-Prince and Cape Haitien, gives good communication between forty-eight important centers of the Republic, some 1,250 miles of long distance service created. The telegraph system has been improved and these two services function not only without cost to the Government, but yield a net profit. A radio transmitting and receiving station has been constructed and regular broadcasting inaugurated. The capital and other cities have public buildings which are ornaments to their localities. Parks, streets, and public squares have been built, improved and beautified. A remarkable program of public school construction has been carried out and students are rapidly being changed from the ill-adapted school buildings of former times to fine modern structures. New hospitals have been built and old ones modernized. The housing of the services of the Garde d'Haiti, the combined police and military force of Haiti, has been nearly completed and modern, serviceable customs houses erected and former ones improved in all the principal ports. Twelve of the existing sixteen light-houses have been built since 1915, and nine wharfs constructed. Irrigation practically non-existent since French colonial times has been revived and over 100 miles of canals constructed serving 8,000 farms

and a population of 62,000. Surveys for sixteen additional projects of 107,000 acres have been completed. Municipal water systems have been reconstructed, expanded and rendered sanitary. Sixty-four villages have been given an adequate healthful water supply.

Some of the results of the fourteen years program of the Department are strikingly shown in graphical representations given as an appendix to this report. The results have been obtained entirely from current revenues of the government with the exception of some \$300,000.00 granted from the proceeds of the 1922 loan.

The work has been retarded due to the insufficiency of these revenues. An enormous task still faces the Department, but the productive projects accomplished will help advance the economic day when government revenues will be sufficient to take care of increased, necessary construction and public services.

A policy of the Department, successfully carried out, has been that of continued instruction of Haitian technical personnel and the gradual replacement of foreign technicians, and their indoctrination with the spirit of loyalty to the Government and their services. As a result during the so-called disorders accompanying the students' strike in December not a man left his post, although employees were subjected to extreme pressure and clever incitation to "walk-out" in a sympathy strike.

Following is a brief recital of outstanding developments during the fiscal year 1928-29. A more detailed summary of the work of the Department is included in the appendix to this report.

Due to the emphasis placed on road work and construction, the number of employees increased twenty-four per cent., whereas the expenditures were 2.7% less than in the preceding year.

HAITIAN PUBLIC WORKS, ENGINEERS AND ARCHITECTS

The policy of training and promoting Haitian commissioned personnel was pursued diligently throughout the year. Two Haitians were commissioned in the active service and two others were promoted. Two native engineers resigned during the year. In general, increased authority was given native commissioned personnel during the year and the interest of the native commissioned personnel maintained by the Seventh Annual Conference of the Corps held in April, 1929, at which five excellent papers were read and discussed to the benefit of all. The annual meeting of the Haitian commissioned engineers and architects is the oldest established professional conference in Haiti.

Personnel. Previous records were broken with an employment of 8,933 for one year, as compared with 7,000 in the preceding fiscal period. The ratio of Haitians to Americans was 297 to 1.

Expenditures. The Public Works Administration expended a total of \$2,249,909.00 during the year, as compared with \$2,311,000.00 in 1927-28. The expenses of general administration were reduced from \$226,179.33 to \$219,236.00 and lesser expenditures were made for harbor improvements. The expenditures for roads, bridges, and trails increased from \$559,749.34 to \$768,827.24.

Public Buildings Service. The activity in public building construction was only 70% of that of the previous year, but was attended by an improved quality of workmanship and quantity of work per man a day. Of importance to the development of this branch of the Department, as well as to Haitian construction in general, was the inauguration of a plumbing school during the year to fill the pressing need for plumbers.

Notable in the construction of public buildings during the year was the completion of the headquarters building at Las Cahobas for the Garde d'Haiti, the largest structure yet completed by the Department outside of Port-au-Prince; the construction of a 250 student unit for the Brothers' School at Port-de-Paix and a 250 student additional unit for the Sisters' School at Gonaives; the starting of industrial school buildings for the Service Technique, which will eventually house 6,000 students; the completion of ten standard rural dispensaries, a morgue, a ward, and a mess hall at the Gonaives hospital; public comfort stations in Port-au-Prince and a sanitary fish market at Fort St. Clair for the national public health service, the Port office building in Port-au-Prince, an ornament to the city's waterfront; and a fine Public Works administration office with storage and garage at Gonaives.

Municipal Engineering Service. The water-works for ten Haitian cities were operated and maintained with a five per cent. increase in subscribers. An improved water supply was gained for Port-au-Prince by the completion of the renewal of the Plaisance-Cerisier aqueduct. In spite of a sub-normal yield of the springs supplying the capital, an adequate supply for the city was maintained by the checking of wastage. Of great importance was the installation of a chlorinator at the Bourdon reservoir which completes the means of sterilization of the water supplies at both Port-au-Prince and Petionville. This accomplishment has resulted in a most gratifying reduction in morbidity rates from water-born diseases. A site has been bought for a much needed reservoir in the Bolosse section of the city. Other accomplishments made in the field of municipal water-works during the year include partial reconstruction of the water distributing system at Petionville; a large extension of the distributing system at Petit Goave and the completion of an excellent headquarters building there; the capping and connection of the water mains and the cleaning of the entire system at Gonaives; the installation at Cayes of a new Diesel plant, enabling the pumping of twice the amount of water formerly pumped with the same cost; the drilling of seven additional wells for water supply for various villages in the Republic; and the capping of a spring at Furcy for public use.

During the year the Service accomplished a fine program of street improvement in the principal cities and towns. Among the improvements may be mentioned the paving of John Brown Avenue in Port-au-Prince with penetration asphalt. In this city, a total of 31,000 square meters of macadam and 35,000 square meters of asphalt were laid during the year, in addition to the maintenance of all streets previously improved. A careful study was made of the street cross sections of the various parts of the capital, with the view of obtaining the most useful and ornamental at the very lowest cost and a campaign to interest property owners in contributing to the cost of constructing improved streets was started. In Port-au-Prince, alone, 8,100 linear meters of concrete curbs and gutters were constructed and open drains on two of the principal avenues were eliminated. In other cities of the Republic a large total of the drainage projects, concrete curbs and gutters, was carried out.

In Port-au-Prince, the Department issued 201 building permits of a total estimated value of \$557,800.00, a figure considerably higher than that of the previous year.

IRRIGATION SERVICE

Large section of Haitian farm lands were subjected to unusual drought during the past year and lack of water storage facilities prevented the remedying of this condition. As a result, crops in the irrigated districts were smaller than in the preceding year. The irrigation service of the department is continually showing peasant users a more economical and better use of water and a steady improvement in this respect is being noted. A total of 148 kilometers of canals was operated on the Grise and Blanche systems and grades have been changed to give a full head of water. Many new weirs were built and the Momance dam was enlarged and to prevent wastage an inverted syphon was built on the Momance to carry water to the North side.

The valuable hydrographic service of the department is to be mentioned here. Rainfall records were kept for 127 stations, evaporation records for two stations and temperature records for thirteen stations.

ROADS, BRIDGES AND TRAILS SERVICE

The construction of vehicular trails to open up rich areas now served only by paths, traversed with difficulty even by loaded "burros," was one of the chief objectives of the department during the year just closed. By vehicular trails are meant trails sufficiently wide and with grades and curves of a character to permit automobile traffic. In general, they have a ten-foot wide gravel surface and are well drained and should be able to withstand the elements and traffic with small maintenance cost. This network of vehicular trails, which will be steadily extended, will bring economic benefit not only to the immediate district served by them but to the country as a whole. Increased construction of such routes was especially necessary during the past year, due

to the fact that the hurricane of August 10, 1928, practically obliterated all the trails in its path. As a result, the greater part of the construction was in the "Hurricane zone," but other sections of the country were also benefitted. Of note was the improvement of the trail following the "Royal Road of Christophe," built over one hundred years ago, but for a great many years practically impassable. On this trail, an automobile can now go from Cape Haitian to Milot in less than thirty minutes.

The outstanding road improvement of the year was the hard surfacing of the Petionville road, inaugurating the system of the department of installing durable surfacing on heavy traffic roads. It is $5 \frac{2}{3}$ kilometers in length and in its construction the asphalt penetration method was used in Haiti for the first time. This road is a splendid example of modern highway construction, marked for the aid of traffic and having modern wire mesh road guards at dangerous turns and beautified with trees, shrubs, and vines. Many other improvements were made throughout Haiti during the year, including the elimination of curves at railroad crossings and the construction of drainage structures and gravel surfacing. Work was continued on the Trouin-Jacmel road and the Petionville Kenscoff road was started on November 18, 1929. Surveys for other needed routes were made including a study of the proposed main road down the center of the southern peninsula.

The program of bridge construction and repair was maintained throughout the year. Among the achievements of this service may be mentioned the placing of two ninety-one foot steel spans into the Christophe's bridge; the completion of a re-enforced structure at La Matrice with three twenty-one foot spans and the opening of traffic at the St. Louis du Sud bridge of steel, "I" beams encased in concrete with three forty foot spans; the completion of a new ninety-one foot steel truss bridge over the Gosseline and many other minor concrete and wooden bridges as well. Continuous careful maintenance of existing bridges was performed during the year. The most important repair was the raising of the Second Street bridge in Cape Haitian, originally built in 1896 and consisting of a single steel span of 171 feet.

SHOP SUPPLY AND TRANSPORTATION SERVICE

The shops handled over eight hundred job orders of a total value of \$60,000.00. The offices of the storehouse service were moved to the general storehouse,—effecting economies. The efficiency of the garage, servicing automobiles and road machinery, was improved.

Harbor Improvement Service. Outstanding in this service was the completion of a modern re-enforced concrete wharf for the city of Jeremie. In addition, new wharfs were built at two other sections. Efficient maintenance of existing wharfs was performed and in Port-au-Prince harbor a part of the sea-wall was repaired and strengthened.

Telephone, Telegraph and Radio Service. The patronage and satisfac-

tion of the public in this service continued to grow during the year. Long distance facilities and, in Port-au-Prince, local automatic telephone service were increased. The total revenue for the year, both commercial and official, increased eight per cent. That from commercial sources alone increased 9.2%.

Total revenue exceeded total expenditures by 8.8% and, based on a total plant investment of \$492,000.00, the gross earnings for the year were 13%, which, allowing 5% for depreciation and 5% for improvement, would have given a net earning of 3%. This result was obtained in spite of payroll increases which augmented the average pay per man from \$23.43 to \$24.11. While no new telephone exchanges were opened there was an increase in subscribers of 17% during the year to the forty-eight exchanges now operated.

The outstanding incident of new construction was the completion of a telephone line from Las Cahobas to Belledere, 37 kilometers in length, which will eventually be joined up with the Santo Domingo telephone system, to give long distance communication with the neighboring Republic. The service between Port-au-Prince and Cape Haitian was improved by the construction of a grounded circuit. A cable system for local subscribers was installed in Petit Goave and St. Marc. In Port-au-Prince, 400 additional lines were completed in April, 1929, bringing the capacity of the exchange to 1,200 lines, affording a possible total of 1,400 subscribers as compared with the present subscription list of 1,170. The maximum number of calls in the Port-au-Prince exchange in one day in 1929, was 27,574, as compared with a previous maximum record of 20,583. At Cape Haitian the telephone system has reached capacity and requests for additional telephones in certain localities have been refused.

The Regular scale of broadcasting has been maintained and fourteen public address stations are now maintained throughout the Republic. In addition, radio sets were installed in fourteen farm schools and instructional broadcasting is carried on for them.

Cadastral Administration Service. A cadastral administration service was organized on February 19, 1929, to prepare a law for determining and recording land titles. This question was still a matter of study for presentation to the Haitian State at a later date, at the close of the year.

PUBLIC HEALTH

The work of the department of Public Health, since 1915, is an inspiring chapter in the history of Haiti.

Prior to that date, a national public health service consisted of a loosely organized body of practicing physicians, known as a Jury Medical. Poorly financed and without support from the public, the courts or from abroad, it never had and, as formed, never could have entered upon a stage of progressive activity. As a result, the entire country teemed with filth and disease.

A description of the Haitian General Hospital from an eye witness at the time states: "The building resembled one used for a stable, being divided into stalls or small rooms, without floors and none had beds . . . On the first day that I went to the hospital, shortly after landing, I saw three men lying dead among the others." This description of the Haitian General Hospital applied to the few other so-called hospitals which were really nothing but shacks where human wrecks were brought to die. Some 80% of the Haitian population were diseased.

In 1919 the Haitian Government with great wisdom organized the national public health service by law.

To enumerate a few of the outstanding accomplishments, in this ten-year period, 11 modern hospitals, fully equipped, have been placed in operation. A medical and hospital training school of the highest type has been given the Haitian nation. As further reorganized in 1926, the service afforded by the school was recognized as sufficient by the Rockefeller Foundation to justify its financial support. Valuable research work has been carried out in the field of tropical diseases.

Health has been carried to the people by rural and traveling clinics, in many instances in districts which for over a hundred years have never seen a doctor.

For more than 200 years three diseases—yaws, malignant malaria and intestinal diseases—have claimed a terrific national toll of Haitian lives. The Department's campaign of sanitation has reduced the incidence of malaria, water borne, and epidemic diseases in the most populated districts of the country. A splendid effort toward the elimination of the national scourge of yaws has been made. What has been accomplished in terms of human happiness and health by the public health department is matched by its contribution toward the economic welfare of the country. No single activity of the various Government departments has been of greater economic benefit than the work of the clinics in restoring to productive labor tens of thousands of disease-ridden Haitians. The importance of this medical, surgical and sanitation attack, seldom paralleled in the world's medical history, is not limited to human and economic benefit. The work of the rural clinics has been the greatest single factor in destroying superstition among the country masses.

It is aiding to destroy the barrier between the country and the city which has been potent in the political difficulties experienced by Haiti in the last 125 years. Prior to 1915 the remote country Haitians entertained complete mistrust and suspicion of the town man and other inhabitants. The latter had constantly exploited him and impressed him into the so-called armies. On the other hand, the town man prior to that date, seldom ventured far into the interior because of his fear for his life. The peasant today is seeing that kindly and sympathetic Haitians in the cities are manning the

public health units which are ridding his people of disease. He is getting a valuable and novel political idea, ideal, that a government can be one of popular service. The work being done by the public health department has other than a national significance. In these days of rapid transportation, when the potentialities of yellow fever and bubonic plague are being brought over night to neighboring countries and the United States, the work of this service has an international significance.

The achievements above cited have been accomplished at an average annual expenditure during the past ten years of only \$490,000, or a per capita of 24.46 cents per annum. Even in 1929, when the greatest program was fulfilled, the per capita cost to the Haitian tax-payer was only 44 cents. Public health work has been limited and handicapped here by insufficient funds for, whereas the Haitian Government is now solvent, it cannot attain prosperity until after many years of effort.

The fine record of achievement to date, however, constitutes only the first phase in the necessary program, final success in which can only be reached after many years. An intensive and widespread mass treatment must be waged to eliminate pandemic yaws, the cause of great and economic loss and suffering in Haiti. The reduction of tuberculosis, epidemic meningitis, hook worm, malaria, dysentery and typhoid fever from Haiti cannot be accomplished in a single generation. The ignorance of the people is a principal obstacle. A campaign of unremitting intensity for which increasing funds are urgent and in which professional competency must be matched by devotion, must be waged.

At the present time there are only 159 practicing physicians in Haiti, of which 42% are in the public health service. Of the balance of 58% all are in the cities and none are in the country, thus the peasant is left to the Voodoo doctor or if he is fortunate, to the American doctor in the traveling clinic. The public health department, and its medical school, is steadily working to remedy the lack of trained physicians and personnel. It is a subject of gratification that despite the exercise of adroit and intense pressure by political agitators during the December disorders following the "students' strike," the personnel of the department remained loyal and calm.

The following is a brief recital of certain outstanding developments of the year just ended. A more detailed summary of this period is given in the appendix to this report. The progress made by the service is also strikingly shown in the appendix containing graphical representations of the work done in recent years by the "treaty departments" of the Haitian Government.

Record Program of Public Health Service in 1929. The year 1929 was the record year of achievement for the Public Health Service in Haiti. Total disbursements increased from \$796,701 in 1928 to \$986,334 in 1929. Of this last total the National Government furnished only \$887,086, a per

capita of about 44c. The Central Relief Committee, the Rockefeller Foundation and The American Red Cross contributed \$51,820, municipal government \$29,080 and the balance of the receipts were from hospitalization and sanitation work.

Hospitals, Dispensaries and Rural Clinics. This increase of approximately 11% in expenditures was more than compensated by the great expansion in all the services of the organization. For example, rural clinics were increased in number from 139, to 147, giving a remarkable total of 1,341,000 treatments, an increase of 36% over the total of treatments in the preceding twelve months. Hospital admissions increased 17% during the year to a figure of 10,588. On July 1st the Public Health Service took over from the Garde d'Haiti the hospitalization of patients with mental diseases and the care of delinquent minors. In addition, the Service initiated a course giving selected hospital corps men of the Garde four months special training in dispensary, surgical, urological and operating work. The Haitian General Hospital at Port-au-Prince was greatly modernized and its service improved during the year. Helpful reorganization was effected in the outpatient, radiology, maternity and private ward departments, and the institution despatched a traveling clinic for three months to survey the isolated populations of the Morne La Selle mountain range. At Aux Cayes, Petit Goave and Gonaives, additions to Public Health Service hospitals were made. In the other six hospitals maintained by the Service throughout Haiti improvements were also effected.

Divisions of Laboratories. With the aid of the American Committee on research in syphilis a comprehensive study of the relation of yaws and syphilis began.

Division of Quarantine and Sanitation. Great progress was made in all phases of the sanitation and quarantine work. Swamp control measures in the Martissant section of Port-au-Prince were extended, a modern and sanitary fish market, the first of its kind in Haiti, has been constructed in Port-au-Prince; some 2,000 acres of swamp lands were reclaimed near Gonaives and Aux Cayes; swamp control measures were carried out at Hinche, three localities near Cape Haitien and other centers; a new market building started in Petit Goave and the existing market improved in Jeremie. To further the splendid measures of control of malaria already effected by the Service, the entomological department of the service of ipidemiology was strengthened by the addition of a trained American entomologist. Paris Green dusting by hand, by blower and by airplane was added to mosquito control measures. These innovations will effect in the future a great saving of money in replacing the use of crude oil.

In the areas devastated by the hurricane of August 10, 1928, 299 homes were rebuilt or repaired at a total expenditure of \$36,829. Sanitary inspectors completed the first accurate census of Port-au-Prince on January 4, 1929,

showing the capital city to possess a population of 79,797. Previous estimates had varied from 100,000 to 200,000.

Division of Education. Medical instruction in Haiti was strengthened by the addition of a new and important unit, the anatomy pathology building of the medical school and the nation's first health center was established in Port-au-Prince, functioning chiefly in infant welfare work, including pre-natal and post-natal care. Rockefeller Foundation fellowships were granted to eleven members of the medical school for foreign study. The Director of Laboratories was sent to Panama to study certain types of technique employed there in the Herrick clinic; a member of the Dental faculty was given three months post-graduate work in the United States; a graduate of the nurses' training school was given one year's training in public health nursing at Columbia University and the Directress of the nurses' training school enabled to visit Porto Rico to study and report upon nursing activities in that country.

The public health nursing movement in Port-au-Prince was extended during the year.

Division of Legal Medicine and Vital Statistics. The creation of this Division in August filled a fundamental need. Due to its creation the solution of many legal problems constantly arising in public health work can be expedited as never before. The Division is now at work on long needed projects of law which will revise and modernize the present medical, dental, nursing and midwifery practice act; will modernize the control of foods and drugs, the collection of vital statistics and will effect reform in legal procedure with respect to patients afflicted with mental diseases. Instancing difficulties encountered by the Service and the need for this Division is the fact that in but 38.3% of the 1,157 cases referred to the courts throughout Haiti for sanitary code infractions were convictions obtained and sentences awarded.

Division of Supplies and Transportation. The 82 motor units that are bringing health to rural Haiti were operated at an average maintenance cost of only \$524 per unit. A total of 133,499 miles were covered in the clinical work of which 109,181 miles were by automobile; 19,824 miles on horseback; 4,244 by boat and 250 by airplane.

Division of Personnel. To cope with its increased tasks the Public Health Service increased its personnel from 2,010 to 2,222 in 1929. In spite of the penury of competently trained persons, the Service did not increase the number of Americans employed. American employees account for only 1.72% of the personnel.

The Service was able to withdraw four members of the American naval personnel from the ten sanitary districts and replace them by Haitian physicians to act as district public health officers.

Division of Finance. The work of the Service has necessarily been one of charity but the Service is now devoting especial attention to the lowering of the volume of free care given by hospitals and sanitary units. This is in the interest of democracy and sound economics and will eventually result in proper medical and sanitation service for all the people.

SERVICE TECHNIQUE

Owing to the character of the country and its inhabitants, Haiti is and will remain for many years essentially an agricultural nation. The national wealth is in its agriculture. There are no important mineral resources capable of profitable exploitation, under present conditions, and industry is as yet insignificant. Nearly 90% of the population is directly engaged in farming.

The condition of the peasants has been one of absolute poverty, utterly primitive farming and living conditions, ignorance and disease. On an area two-thirds the area of the neighboring republic of Santo Domingo is settled a population nearly three times as great.

Fundamental to any further important general advancement of the country is the business of education and of improving national and individual wealth and health.

To promote popular education especially in the rural districts and increase agricultural production were the purposes for which the Service Technique de l'Agriculture was called into being by the Haitian Government in August, 1923. Organization was largely completed and the Service able to begin effectively to function towards the end of 1924.

It was suggested by some in the beginning that the Service confine its efforts to so-called "practical projects" to increase immediately the acreage and production of existing Haitian crops, to introduce new crops and crop diversification, in order to wean Haitian economy from its dangerous dependence on coffee culture, which normally accounts for 75% of the exports. It may be stated here that "culture" is a misnomer for the crop has been essentially a wild one as regards cultivation. The Service was urged by certain advisors, not having carefully studied the problem, to encourage large scale agricultural concessions—inevitably to foreign interests since native capital was not available—on Government and private land and to provide numerous modern farms on the theory that once shown the way the tropical peasant would immediately desert his ignorant and easy mode of life for intensive, toilsome cultivation.

It would have been possible by a system of expensive "drives" and bounties to have stimulated production of certain crops and this has been and is still being done in certain cases. The experience of the Service has shown, however, that such artificial results would have been of brief duration

and, in most cases, would be unprofitable in relation to the money expended. Once the pressure and rewards are removed the peasant relapses. The matter of promoting large scale agricultural concessions was complicated by the question of land ownership, previously referred to in this report, and the scarcity of really good land. Concessions have been granted but to have sought indiscriminately to increase their number would have obliged the Haitian Government to accord them on long and over-generous terms not to the eventual benefit of the country or its population, already overcrowded in most farming districts. It was the desire of the Service to develop Haiti for Haitians.

The model farm idea is of some but not complete value. It is used by the Service at the present time. To have immediately created a great number of model farms would have necessitated funds and a supply of trained agriculturists which were not available. It is a mistaken idea that example is all that is necessary for the tropical peasant to mend his farming ways. This has been learned by actual experiences of the Service, but is also historically shown.

At the moment when Haiti conquered its independence from France the French colonists had developed a highly successful system of tropical agriculture, and irrigation. The country was in a sense a huge model farm. As soon as the untrained peasants came into occupation of the land, agriculture began to decay and revert to a primitive state. The peasant of today has neither in character, intellect, education, in farming ability nor outlook greatly changed since 1804.

The Service Technique, therefore, decided that in order to achieve permanent, important results, it must include in its program wide-spread agricultural and vocational education of the younger generation. This was a novel departure in Haiti. The previous limited educational system was chiefly along strict academic lines, a system doomed to failure in a country where over 90% of the population is illiterate and poor and destined to perform manual labor to gain their livelihood. It is to be noted that in the rural districts of the Philippines a 35% relapse into illiteracy within five years after schooling has occurred.

There were practically no teachers available for the farm and industrial schools. Instructors had to be trained. To get literate teacher material it was necessary, in the beginning, to use students from the towns who had access to some elementary instruction. A normal school with a faculty of American teachers was started. Only two Haitians could be found with the necessary qualifications for teaching agriculture. By 1925 nine farm schools and three large industrial schools were in operation. In addition at the Normal School, higher agricultural education for the training of teachers, research workers, and farm advisors was started.

A system of service to adult farmers through farm advisors and demonstration farms was inaugurated with success and direct aid was given to the farmers through annual clinics and demonstrations in the control of both plant and animal diseases and injurious insects. Experiment farms to develop new or improved plant varieties and animal breeds for Haitian agriculture were begun.

Forestation—in a country whose forests had largely disappeared—and flood prevention projects were launched. Foreign companies were encouraged to come in and initiate fairly large scale farming projects in sisal and other crops—particularly for crops which could be sown in uncultivated areas—for the country needs a certain amount of such foreign capital, the increased productiveness and the example of initiative and scientific farming afforded by the operation of such concessions.

The above has been the program of the Service Technique. The difficulties faced by it in its work are too numerous to be recounted here. Insufficient funds have retarded the program. The program is a long term one. Twenty years—a short time in the history of national development—will be necessary before this first stage can achieve pronounced success. It is believed to be, however, the only program which will give permanent result in raising the financial and cultural level of Haiti and its agricultural masses and provide a foundation for stable democratic government.

Following is a brief general summary recounting the main accomplishments of the Service since its inception:

SUMMARY OF CHIEF ACCOMPLISHMENTS OF SERVICE TECHNIQUE IN PAST FIVE YEARS

1. Establishment of a normal school which has trained more than 400 teachers and technical assistants who are now employed in educational and scientific work.
2. Established 65 rural farm schools with 7,493 students.
3. Established 8 industrial schools with an enrollment of 3,293 students.
4. Established 5 experiment stations as follows:
 - (a) At Port-au-Prince, 200 acres for general crops, fruits, vegetables and dairy husbandry.
 - (b) For coffee and cacao, 100 acres. (Fonds des Nègres).
 - (c) For cattle, 1,500 acres. (Hinche).
 - (d) For sisal and cotton, 400 acres. (Hatte Lathan).
 - (e) For forestry, palm nuts, bees and cattle, 100 acres. (Poste Chabert).
5. Inauguration of a Forestry Department, passage of law providing for national forests, and establishment of two Forestry Experiment Stations.

The Forestry Department introduced sisal culture and in the Experiment Station of 200 acres demonstrated its successful production in Haiti, with the result that there are now three companies with 8,500 acres planted producing the finest grade of sisal, thus adding to Haiti's agricultural wealth.

6. Established a Department of Markets for assisting in the development of Haitian foreign commerce and for finding markets for hitherto unmarketed Haitian products.

The Department of Markets has:

- a. Organized a source of commercial information concerning Haitian products, custom duties, regulations, freight rates, sources of supply, et cetera, for use of foreign buyers and similarly the collection of information concerning foreign markets for Haitian products which shall be useful to Haitian exporters.
- b. Made contracts between Haitian exporters and foreign buyers.
- c. Assisted materially in the formulation of the Coffee Standardization Law recently passed. This department has also helped in putting the law into operation by assisting in the education of the public in the requirement of the law and in training the customs officers in the grading of coffee.
- d. Has demonstrated the successful canning and marketing of Haitian fruits and vegetables such as guava paste, tomatoes, etcetera.

7. Established a Printing Department, modernly equipped, functioning as a printing school and doing a large part of the Government printing.

8. Established an Agricultural Extension Department with 34 Haitian supervisors and demonstration agents, teaching adult farmers throughout the country modern agricultural and animal husbandry methods. Among the accomplishments of this unit may be mentioned its excellent work in promoting the culture of cacao and teaching its proper cultivation and preparation.

9. Established a Horticultural Department which in the last year and a half has grown and furnished the Extension Department 65,000 orchard and garden plants; furnished landscaping plans for 45 public and private grounds.

10. Established a Department of Chemistry which, in addition to teaching duties, has made complete soil surveys of 3 sections totalling 107,000 acres; originated methods of control of sugar cane chlorosis and rate of fermentation in distilleries; acted as a chemical laboratory for the Customs and Internal Revenue Service.

11. Established a Botanical Department which has:

- a. Built up a Haitian herbarium of over 5,000 species of plants;
- b. Determined the cause of Fruit Blackrot of pineapples and suggested methods of control;

- c. Made a survey of Haitian plant diseases;
- d. Published two text books on botany for Haitian schools;
- e. Cooperated with the Department of Agronomy in the production of an improved strain of native Haitian cotton. This cotton has sold for prices comparing favorably to Egyptian cotton and its extended cultivation will greatly add to future Haitian wealth.

12. Established a Veterinary Department which to date has trained 12 Haitian assistants and in the past five years has held 8,379 public clinics and healed 315,267 animals. The Chief of this Department has written and published two text books for Haitian students on veterinary subjects and is publishing a third.

13. Started an Animal Husbandry Department of the Port-au-Prince Experiment Station, producing on a paying basis for the first time in Haiti "Grade A" Pasteurized milk and cream; established 10 breeding posts with pure bred donkey, boar and bull for improving Haitian livestock; demonstrated hog culture is profitable in Haiti and trained a corps of Haitian dairy workers and livestock tenders as well as technical assistants and teachers.

14. Aided 10 students of proved character and ability to undertake special university work in the United States unobtainable in Haiti. Four of these students have returned and are in executive and teaching positions.

Following is a brief review of the work of the Service during the past year:

Outstanding Developments in Fiscal Year 1928-29. Among the outstanding developments in the work of this Service in the fiscal year 1928-29 may be mentioned the inauguration of a greatly enlarged program of industrial education in Port-au-Prince, the continuance of a vigorous program of expansion in the development of rural education, a large increase in enrollment in the Service Technique schools, the production of pasteurized milk by the Damien dairy and the development of an improved strain of native Haitian cotton.

Personnel. In accordance with its program of development, the Service Technique increased its employment during the twelve months from 377 to 476. The results of the training of Haitian employees and the policy of the steady replacement of foreign personnel, as competent native instructors are trained, is illustrated by the fact that the percentage of non-Haitian employees dropped from 10 to 8.4%. When the Service was organized in 1923, the percentage of foreign employees was 26%.

Enrollment. Attendance at Service Technique schools has increased from an initial enrollment of 51 in 1923 to a total of 11,430 in 1928-29, a gratifying progress. An enormous task still faces Haiti in this field, for there are almost 400,000 children of school age and the existing schools of all types

(including national, religious and private schools) can only accommodate slightly more than 100,000 students.

Inventory. The inventory of the Service Technique property at the end of the last fiscal year gave a result of \$1,475,000.00 as compared with \$217,600.00 in 1923-24 and \$923,800.00 at the end of the preceding year. Buildings, \$685,000.00, equipment \$714,600.00, account for the bulk of the total inventory.

Expenditure. The extensive program of the Service in 1928-29 was achieved at an expenditure of \$612,655.00 for salaries, labor, materials, equipment and expenses. In addition for new school buildings, \$720,000.00 were authorized. Of this amount \$600,000.00 was allotted for the construction of industrial schools in Port-au-Prince, which will accommodate 6,000 children and will replace some forty primary and elementary "academic" schools now inadequately housed in unsanitary and unsafe buildings. In the past, education in Haiti was restricted to a small and elite section of the people. The extension of the industrial school system is designed to make education in Haiti really popular, designed to meet the needs of the masses who must look forward to earning a living by labor of some sort. These industrial elementary schools do not mean that students having the means and the desire to obtain further instruction will be handicapped or precluded from doing so, as for further training in the sciences, arts or professions no better foundation can be laid than that given them in the industrial schools.

Normal Training. As previously stated, one of the problems in the development of the agricultural and industrial school system was the building up of a force of instructors in agricultural manual training and the industrial trades. This work is being done at the Ecole Centrale and along most efficient lines. The normal course in agricultural and industrial education gives the aspirant teacher not only a foundation in the subject matter of his profession but also manual skill in doing the practical work involved. Emphasis is laid on laboratory, field and shop work and every effort is made to impress the students of the importance of the practical as well as the theoretical side of his profession. Previously in this report, it was stated that in these beginning years it was necessary for the Ecole Centrale to draw chiefly upon urban students for teacher material as the rural districts are not yet producing, in any number, candidates having passed the lower schools. This was a necessary but undesirable feature and as the Service Technique's program of rural education develops, instructor material for agricultural education is more and more sought and found in the country districts. In order to make a start it was also necessary to give scholarships to attract students. Dependence on the town population for students, and on a system of paid scholarships, was partly responsible for the students' strike, described previously in these pages. It is again repeated that the students' strike did not indicate any real dissatisfaction among the mass of students who were carried away by strike

leaders, in turn impelled by outside agitators using a minor affair as an excuse for political agitation. Applications for the places of those students who have not returned at this writing have exceeded vacancies. The majority of teachers graduated and the students at present under instruction at the Ecole Centrale are successful and enthusiastic in their work. This fact is attested by the increased number of and attendance at the rural farm schools.

In addition to regular instruction at the Ecole Centrale the Service, during 1928-29 encouraged, and in some cases financially aided nine students to take special agricultural and industrial studies in American universities. Prior to the introduction of this idea, novel to Haiti, of agricultural and industrial education, practically no Haitian proceeding abroad for study ever considered any course but the law or medicine, and most particularly the former. There was a great surplus of lawyers, a penury of doctors and dentists and a nearly absolute lack of industrial, chemical or agricultural engineers necessary to the material development of the country.

It is realized that any permanent efforts to raise the educational level of the population cannot be obtained without schooling for the girls as well as for the boys. There are two industrial schools for girls at the present time with an enrollment of 327. The \$600,000.00 allotment for new buildings includes two industrial schools to accommodate 1,000 girl students.

CONCLUSION

In addition to the annual reports of each of the treaty officials, there are appended summaries of accomplishments. As customary in previous reports, graphic representations have been made in order to bring out more clearly certain outstanding facts.

A careful examination of this data shows the decided progress that has been made particularly during the past eight years. In a very large measure this progress is due to the wisdom of President Borno and his earnest efforts to cooperate in the carrying out of the provisions of the Treaty of 1915. The achievements that have taken place during his administration and the benefits that have accrued to the mass of the Haitian people therefrom speak effectively for themselves and cannot be contraverted.

It is with a great pleasure that I refer to the loyal, devoted, and efficient service of the Treaty Officials. Unappreciated, by the malcontents in Haiti and the uninformed at home, these Americans of unimpeachable integrity are giving their very best to assist in the rehabilitation of Haiti and to bring happiness and prosperity to the Haitian people.

DUTIES OF A MARINE DETACHMENT ON BOARD AN AIR-CRAFT CARRIER

By CAPTAIN BAILEY M. COFFENBERG, U. S. M. C.

IF YOU have never been aboard our floating home and have never spent hours and hours climbing and walking, walking and climbing—without ever going over the same ground twice—you have something interesting to look forward to when once you get on board the latest and greatest "G. A. C.," the U. S. S. Lexington.

"G. A. C."—Giant Aircraft Carrier—is one of the dozens of sobriquets to which we have become more or less accustomed, and which is, at the same time, about the most fitting title for this sea-going airdrome. It is almost impossible to comprehend the immense size of this ship without actually seeing it and spending at least half a day walking over it. But perhaps a few figures will help to impress the reader.

To quote the following: "The size of this Colossus of the deep may be gleaned from a study of her three dimensions, there being: length, 888 feet; beam, 106 feet; depth, 75 feet, from keel to top of Flying deck. The smoke stacks raises 79 feet above the Flying deck, and her mast goes 58 feet above the stack, making the height from the keel to the top of the mast 212 feet. Being designed an Aircraft Carrier, the name implies the purpose to which the ship is devoted. The Lexington is, in fact a huge mother of aircraft, and is equipped for launching and landing the airplanes used in naval tactics. A spacious compartment in the interior of the ship, provides for the storage of about 70 airplanes, assembled and ready for flight.

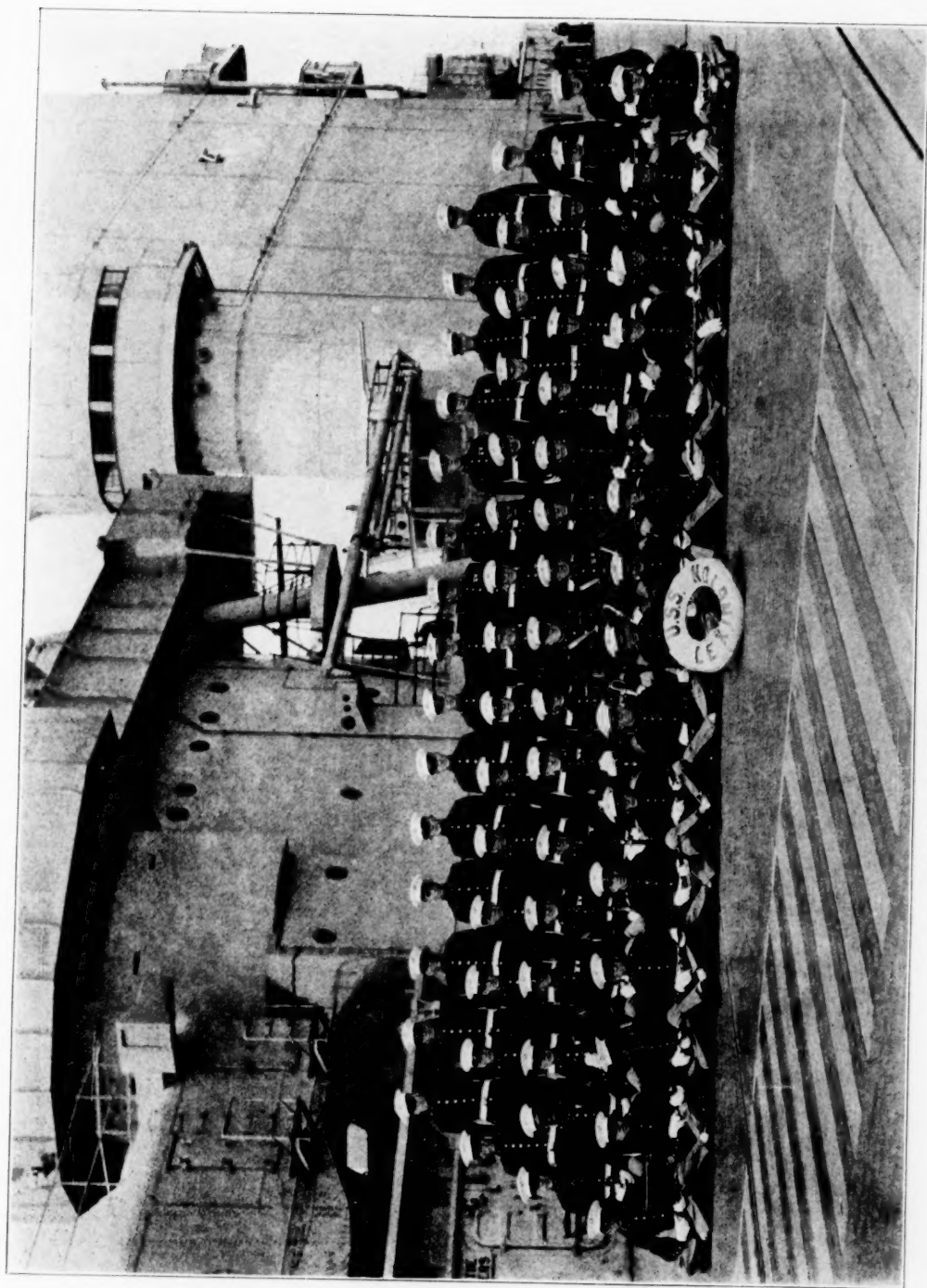
"The complement of the Lexington is 1904, composed of 172 commissioned officers, 22 warrant officers, 114 chief petty officers and 1596 lower ratings."

Included among these 1904 men is the Marine Detachment of 75 men, commanded by a captain with a second lieutenant as the junior marine officer.

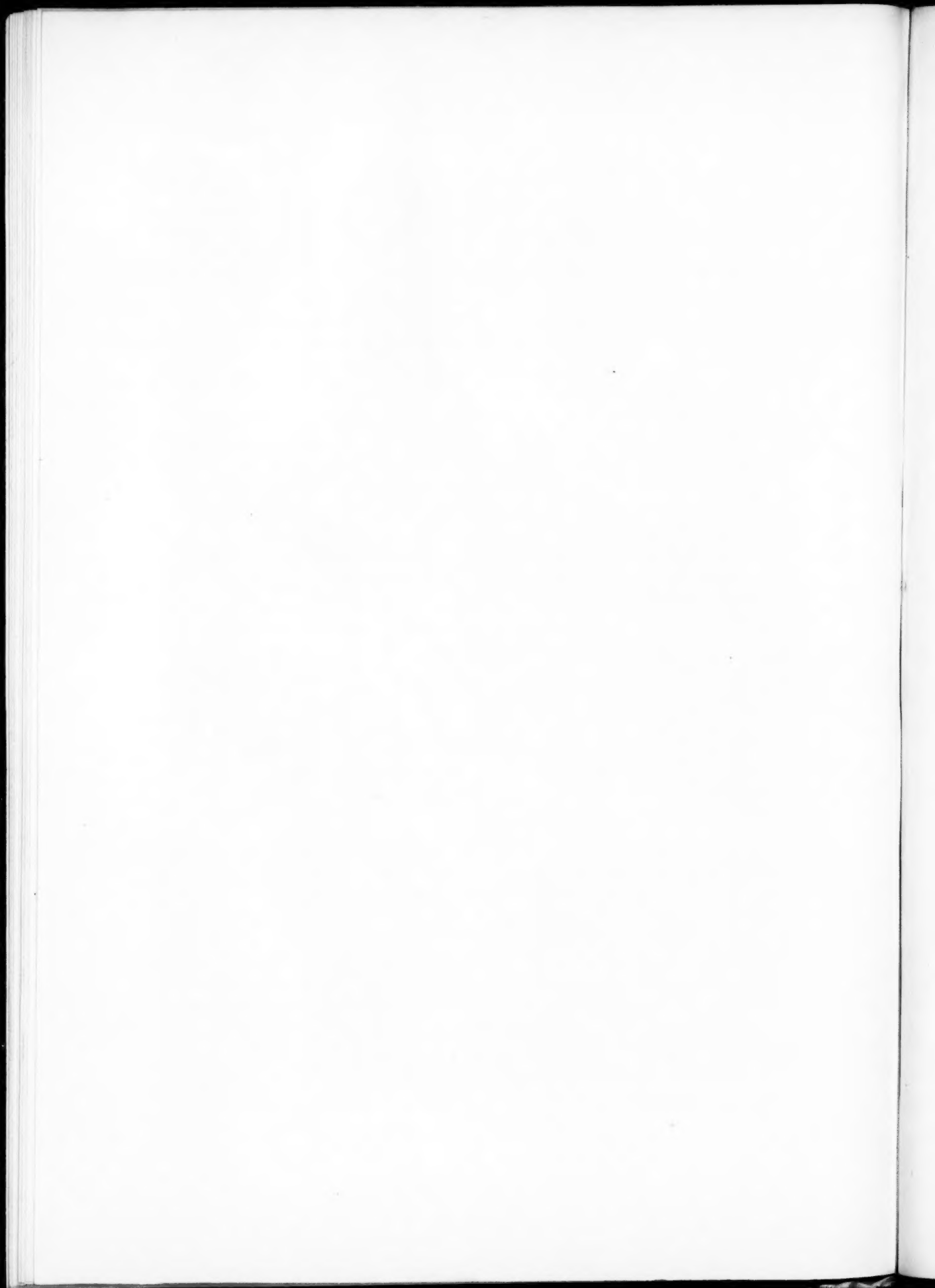
The duties of this handful of marines among almost 2,000 men are extremely varied and, to say the least, very interesting. I dare say, that with the exception of the Marine Detachment on board the Saratoga, our sister ship, no other marine unit afloat has the unique jobs that have become routine for us.

The flight deck makes a very good parade ground and whenever the eighty-odd planes are stowed so as to leave a clear space you will usually find the marines up there taking advantage of it with a little close and extended order drill.

While the Lexington was tied up at Baker Dock at Tacoma, furnishing that city with light and power, we had an excellent chance to make full use



Marine Detachment, U. S. S. Lexington



of the spacious flight deck; more so as there were only about five or six planes aboard at that time and they were usually all stored below in the hanger.

Each morning ten o'clock would be the signal for a crisp, "Fall in," and an hour's snappy drill on our custom built parade ground with the awe inspiring snow covered Mt. Rainier—pardon me, Mt. Tacoma—buttressed up to the clouds in the distance and seeming to be right behind the first row of buildings.

Of course, we have the usual routine work of a detachment afloat too; orderlies and cleaning stations, sentries and cleaning stations, guard of the day and cleaning stations, full guard and cleaning stations—meaning that we do have *cleaning stations*.

The marines take care of the Admiral's cabin, the Admiral's guest room, the Captain's cabin, a goodly portion of the passages in the officer's country where the bulkheads have to be scrubbed and the deck polished every day. We take care of the crew's reception room and central station. And then when those places are spick and span we turn to in our own compartments, of which there are five.

At "General Quarters" the Guard Marine Detachment scatters to all parts of the ship. The marines man one gun in each of the four 5" anti-aircraft batteries, man two sextuple anti-aircraft machine gun mounts, and also furnish men to handle ammunition for the 8" guns.

The marine captain has charge of the A. A. machine gun mounts and directs their fire from Sky Forward. The junior marine officer has charge of the ammunition supply for the entire ship.

When "Flight Quarters" is sounded all pilots go to their planes and stand by to take off, and the flight deck is made "out of bounds" for all personnel except the men actually needed to handle the planes. Again the marines take a hand in things and patrol the flight deck, carrying out this order and protecting the curious and the careless.

Imagine four squadrons of eighteen planes, all warming up at the same time, and placed so that their wings and their tail surfaces overlap. Imagine 18 fighters, 18 light bombers, 18 scouts, and 18 big torpedo planes in as small a space as they can be placed without touching each other. Imagine four times eighteen, or 72 motors turning over 72 propellers all at the same time—something that is rarely if ever seen on any flying field. If you can imagine that, along with the noise and the wind, then you can partially picture for yourself the activities on the flight deck during "Flight Quarters" when the planes are warming up to take off. It is a sight to which we have all become accustomed and accept as an every day occurrence.

Even with such a large space—888 feet by 106 feet—you can readily see that there isn't much room left for spectators when the planes are ready

to take off. But, speaking as one who is very rapidly getting grey hair, you would be surprised at the number of men who have to be chased below, or who have to be chased out of some particular nook where, if a plane *did* swerve and come that way, they wouldn't be able to do a thing but stand there and wait for the whirling propeller to cut them down.

Nets which extend out over the sides of the ship provide for the men handling the planes. When their plane has taken off they run and jump into the nets, leaving the deck clear for the next ship to take off.

Needless to say, the marines posted as flight deck sentries have a very responsible job and one which keeps them busy.

The same is the case when the planes are landing. Everyone wants to watch them coming in for the thrill that comes with witnessing the narrow escapes and the occasional mishaps. I'm afraid that if the sentries were not on the job during the landing the pilots would have the added hazard of dodging the spectators as well as landing their plane safely in the arresting gear.

Duty on board an aircraft carrier is interesting. Aside from the regular ship's routine you have the planes and the air operations, and for anyone who is at all interested in aviation, even if only as a bystander, you will perhaps find more of it concentrated right here on board the Lexington than at any other place where you may be stationed.

PROMOTION OF ENLISTED MEN

By LIEUTENANT COLONEL J. J. MEADE, U. S. M. C.

IN VIEW of the very limited number of vacancies occurring in the grade of Private First Class and the various grades of non-commissioned rank, and in order that the best and most faithful men get first choice, the writer believes that one of the more important problems that commanding officers are confronted with is the careful selection of men for promotion.

Believing that a uniform system of promotion would further improve the morale of the post, I decided, upon taking command of the marines in the Virgin Islands, to establish and follow some particular rule in promoting deserving privates to privates first class and non-commissioned rank.

As the reader knows, the Marine Corps is operating under the law of August 29, 1916, for its distribution of non-commissioned officers. According to the various comments that have come to the attention of the writer, it is quite evident that this law is more or less obsolete as it does not conform to present day Corps activities. This fact is known too, I presume, by Headquarters, as only recently the GAZETTE published an article from the Division of Operations and Training on the subject, outlining a plan for re-distribution of non-commissioned officers.

I know of no greater need of the Corps today than some method which would provide a healthy flow of promotion for our non-commissioned officers, and also give us what really was intended, a greater percentage of privates first class. At present, the law allows us but twenty-five per cent. of privates first class. This is not enough. Think of a reliable and efficient marine, serving a full enlistment, keeping his record clean, then leaving the Corps as a private. Would any reputable civil concern handle its men like that? I doubt it. They know too well what good morale means.

I am thoroughly convinced that well over seventy-five per cent. of recruits, who, after serving from nine months to one year, are fit, from every point of view, to be rated as privates first class. At present there are many good men who are shelved, together with other men of less ability, simply because the law allows only twenty-five per cent. to be promoted to the rank of private first class. We should have seventy-five per cent. of privates first class in the Corps. This would not only give us an opportunity to promote the bulk of worthy privates but it would urge the non-rated man to conduct himself and perform his duty in such a manner as to compel recognition, when his name comes up for consideration after nine months or one year service. I have seen men leave the Virgin Islands, after serving two years, with excellent records, who were still privates.

In an effort to correct this condition, the following plan was adopted in the Virgin Islands and has proven most satisfactory. Referring to our post

roster, we found that replacements came to the post about four times a year. An equal number of men were returned to the States, thus creating some vacancies in rated men. As the short-timers left, it was decided to consider for promotion to privates first class, all men, including special duty men, who had been longest in the post. The selection was based on length of service, record, and ability to fill the grade; the latter qualifications based on performance of their particular duty. In exceptional circumstances, new arrivals who had previous service or had demonstrated that they possessed very superior qualifications, were also considered for promotion; however, this latter feature was a rare occurrence. In brief, as men went out, the next oldest men took their places, provided their records were clear and they had demonstrated by their performance of duty that they could fill the rating. This provided a healthy flow of promotion to private first class. All men soon realized that they would be considered for promotion in due time and that it was up to them to keep a clean record and to perform their duty well. As a result of this method, all worthy men who served their two years in the Virgin Islands, returned to the States in a higher grade.

Referring to the promotion of non-commissioned officers, all corporals were considered for promotion to sergeant. The examination was based on the provisions of the Marine Corps Manual, both theoretical and practical, as well as on the candidates' records. The theoretical counted thirty per cent., practical thirty per cent., record and manner of performing duty forty per cent. With reference to promotion to corporal, all privates first class were considered as well as a number of outstanding privates. The examination was competitive and credits were given as outlined above. The scope of the examination for promotion to non-commissioned rank as laid down in the Marine Corps Manual, was strictly complied with. In other words, if men were required to be examined in map reading, they were taught in class how to read a map so that when they took the examination, they were able to meet the test.

This article is written with the hope that it will assist others in like circumstances, and with the further hope that legislation will be enacted in the near future to revoke all the present laws governing the ratio of non-commissioned officers in the Corps; leaving this matter entirely in the hands of the Secretary of the Navy (Major General Commandant). An increase in Privates First Class is also highly desirable. The Major General Commandant can then base the number in these grades on the Corps needs. It may increase our appropriation slightly, but the resulting benefits would soon be manifest and would give worthy men their chance for advancement.

PRACTICAL EMPLOYMENT OF THE THOMPSON SUB MACHINE GUN

By CAPTAIN ROGER W. PEARD, U. S. M. C.

THIS ARTICLE makes no pretense of being original, but is a compilation of all available facts on the subject, including valuable comments of other officers and the writer's personal views, gathered from observation of the use of the Thompson sub-machine gun in the field in active bandit operations in Northern Nicaragua. It has been prepared primarily for instructional use in the Marine Corps Basic School.

PRELIMINARY CONSIDERATIONS

The first consideration in the contemplated adoption of a new weapon, is to decide whether or not an actual need exists for such a weapon, and if so, what requirements should it fulfill? Multiplicity of weapons is naturally unwise, unless justified by their specific merits.

In the infantry attack, it is of the utmost importance and often essential, to increase the fire power at the short ranges, just prior to, and during the assault; for at these ranges the superiority of fire may well decide the issue.

With normal casualties; the heavy expenditure of ammunition of all infantry weapons; the probable overheating of automatics and semi-automatics and difficulty of maintaining an adequate ammunition supply for them; the necessity of lifting or cessation of all covering fire of machine guns and artillery when the infantry has arrived within short range of its objective; the partial exhaustion of men armed with the heavy automatic or semi-automatic rifles; and the mode of advance at this stage, by rushes, etc., will normally decrease the number of arms actually firing. Thus, at this most critical stage of the attack, the fire on the enemy will ordinarily be diminished just when the success of the attack may well depend on its augmentation.

At these short ranges, high velocity fire, such as delivered by rifles and automatic rifles, is not a necessity, and the Thompson sub-machine gun, whose fire has been withheld until these short ranges are reached, gives a more easily controlled, more sustained, and, due to larger calibre, a more damaging fire, than the ordinary infantry rifles or automatic rifles. The element of overheating is practically non-existent and the rate of fire may be simply and easily increased or decreased, as the situation demands, and this without delay or loss of fire power.

GENERAL CHARACTERISTICS

Thus, when combat conditions call for or make it advisable to utilize an additional infantry weapon to supplement and re-enforce the diminishing fire of existing weapons at the short ranges, this weapon should have the following general characteristics, which are supplied in an excellent manner by the Thompson sub-machine gun:

(1) Freedom from stoppage, due to overheating or complicated mechanism and functioning. The Thompson gun is very simple mechanically when compared to other automatic weapons; it seldom if ever overheats; and in case of stoppage, is the most simple to clear. Stoppages are practically non-existent if the gun has been properly cared for.

(2) It should have a maximum effective range up to four hundred yards, with an emergency range up to six hundred yards. Tracer ammunition is used preferably when firing over four hundred yards.

(3) It should use an ammunition supply already established. By not using the Thompson gun at the longer ranges, the short ranges are reached with its ammunition supply unimpaired. By arming the squad leader with this gun, no fire power is lost at the longer ranges. Using as it does the 45 calibre pistol ammunition, ample ammunition is normally available or easily procurable; 45 calibre tracer ammunition being the only new ammunition even desirable.

(4) It should have a fully and easily controlled semi-automatic and full automatic fire, and its full force should be delivered by a minimum of personnel. The ammunition being supplied as the situation permits, one man can deliver and fully control the maximum fire of the Thompson Gun.

(5) It should be of minimum weight commensurate with the results required; compact and not bulky, nor too much of a physical strain on the gunner, and should have extreme flexibility as to fire control and direction of fire.

(6) The rate of fire should not be in excess of six hundred rounds per minute on full automatic and susceptible of varied bursts as desired. For this reason the new U. S. Navy model 1928 sub-machine gun has had its rate of fire decreased to six hundred rounds per minute. The rate of the 1921 model was 800 to 900 rounds per minute.

(7) It must function in a reliable manner, and if stoppages do occur, they must clear rapidly, preferably without the use of tools, and with a minimum loss of time.

The Thompson sub-machine gun, U. S. Navy Model 1928, comes nearer meeting the above requirements than any automatic weapon yet designed. This model has been thoroughly tried out under actual field conditions in the recent Marine Corps campaign, against organized well armed bandit forces in Nicaragua, with very satisfactory results.

APPLICATION IN CLOSE COMBAT

The Thompson gun is the most powerful weapon we have in the Marine Corps today for fighting at close quarters. All our decisive infantry combat

today necessitates "closing with the enemy"; either we close with them or they close with us. At close quarters this weapon is by far the most powerful individual fighting unit, as the Thompson gunner is a self contained unit, with a light, easily controlled weapon, with sufficient ammunition to see the "close quarters" part of the combat through; his forty-five caliber bullet has the necessary smashing power to kill or stop instantly, which is so essential at close quarters; he has a fifty-round magazine at the disposition of his trigger finger, which he can fire semi-automatically or full-automatically. At close quarters it is very difficult to reload any weapon and the Springfield magazine rifle and the Browning automatic rifle require reloading after five rounds and twenty rounds respectively. The Thompson gunner has the rapidity of fire so essential at close quarters; he has a weapon that can be fired accurately; and the application of the Cutts compensator takes up the recoil and counteracts the upward climb of the muzzle in such a manner that he has stability of fire heretofore unobtainable in any other automatic or semi-automatic weapon.

ORGANIC DISTRIBUTION

While as yet there is no table of organization in any of the U. S. services, laying down definite instructions as to whom, or how many men shall be armed with this weapon, in infantry or other organizations, the probable adoption of the Thompson gun eventually by all branches, makes this phase of considerable importance.

For special emergency missions, such as mail guard duty, the number of Thompson guns per unit will, of course, be regulated by the special form of duty to be performed.

We are more specially interested in the proposed armament of the normal infantry company. When the normal activities in combat are carefully considered, as well as the necessity of maintaining the ammunition supply, it would appear that the following could be so armed to good advantage and with no loss to the infantry by the absence of the corresponding number of Springfield magazine rifles:

- Two runners in company headquarters.

- One runner in each platoon headquarters.

- Each section leader of a platoon.

- Each section guide of a platoon.

- All squad leaders.

The reason I favor arming non-commissioned officer leaders with the Thompson is twofold. First: In the attack they should devote themselves to leading their respective units, and fire control until it is necessary for them to enter the fire fight to increase the volume of fire. Normally this will occur at short ranges, in the assault, and in the capture and organization of the enemy position. Thus when the characteristics of the Thompson can be

employed to the best advantage in the attack they will become available in the hands of persons who should not have entered the fire fight prior to that stage. Secondly: This powerful weapon should be in the hands of the best trained, most experienced, able, and courageous soldiers and normally these should be non-commissioned officers.

I would suggest that the same principles be employed in distributing the Thompson among the other companies of an infantry regiment that I set forth above for the rifle company. Intelligence and communications sections should have them for their isolated missions.

GENERAL CONSIDERATIONS

For military purposes the Thompson gun will permit one man, to deliver a well controlled, long sustained, semi-automatic fire of great stopping power, within its range zone, and a controlled full-automatic fire greater than a machine gun, of greater flexibility, but slightly less accurate.

The range zone of the Thompson gun will always become involved in any attack or in any defense, unless the attack is successful at the longer ranges, or the defense has been successful before this range zone has been reached by the enemy, which is unusual in either case.

ADDITIONAL USES IN SPECIAL SITUATIONS

In addition to the normal infantry use, there are many situations which occur within the range zone of the Thompson gun and where its presence will be of great value, in place of the more unwieldy automatic rifle, or to augment its fire when necessary or advisable. As the sub-machine gunner constitutes a one-man crew in himself, and also carries considerable ammunition for instant use, his presence in numbers when and where needed, can be assured with a minimum of effort and loss of time. A number of such special situations are listed below:

- (1) For use of troops carried to advance positions in an emergency by transport planes or otherwise, for the occupation of strategic positions or as re-enforcements for under-manned garrisons.

- (2) For the use of outposts, strong points, for combat or other patrols, and isolated groups of every nature when possibility of encountering the enemy exists.

- (3) For advance guards, rear guards, and flank guards. Their importance for this use lies in the fact that a small unit, armed with the Thompson gun, may be expected to perform its mission better than a relatively larger unit armed with normal infantry weapons, such smaller unit being more flexible, more easily controlled, and having a greater fire power.

(4) For defense of convoys, bullcart trains, and pack trains. This is particularly important in enemy territory, as such trains cover considerable road space and the point of enemy attack cannot be accurately estimated; thus the guard must be distributed all along the train, and the fire power delivered by one man, and the flexibility of such fire is of utmost importance.

(5) For all night combat work where its fully controlled and full-automatic fire permits definite sectors to be absolutely swept at will.

(6) For the occupation of cities and towns, and general street fighting, as in these cases long range fire is seldom the deciding factor, but quickly controlled fire of heavy stopping power is essential at short range.

(7) For use against attack aviation when enemy planes are engaged in machine gunning and bombing our troop columns. Incendiary tracer bullets are used in such cases. This use of the Thompson gun is somewhat restricted by lack of range, for, although planes usually attack under these circumstances at about two hundred feet elevation, these plane targets are so fleeting that effective fire upon them is very restricted by such a short range gun as the Thompson. These planes although coming very fast are coming toward the ground troops and are swapping trajectories with the ground troops. The sights are not used aside from the first aim and the gun is fired full-automatic at the shoulder from any position. The gunner traverses or searches through the plane to a point in front of the plane and then holds, causing the plane to pass through his cone of fire. This important feature amounts to the placing of a machine gun in every squad which can be brought into action instantly and effectively, with a concentration of fire heretofore unobtainable.

Attention is invited to T. R. 300-05. Upon reading this pamphlet the organization of the fire power of the rifle squad by the addition of a gun of this type can easily be seen.

(8) For setting fire to woods, grass, or other enemy cover, by means of highly incendiary tracer bullets.

(9) For raids of all kinds, close combat in cover, and flank attacks on machine gun nests.

(10) For use in tanks, and armored cars, in addition to the regular armament, thus increasing the fire power without overcrowding or increasing the number of personnel required for guarding same. A great deal of attention is now being paid to mechanization, and although we already have tanks and armored cars, we can expect to see them in increasing numbers in the future. When these units go into action they are the focus for concentrated fire and numbers of them are put out of action. When this occurs, the members of the crews who are still effective

are supposed to dismount the machine guns and advance as a machine gun squad. The infeasibility of this is apparent when it is remembered that it takes eight men to service a machine gun and the complement of the tank may have been less than half this number in the first place to say nothing of casualties. These men are trained men and would be most effective if equipped with the Thompson sub-machine gun.

(11) For general cavalry use, and in particular when advantage is to be taken of their mobility to occupy and hold advanced or strategic positions.

Aviation has now supplanted one of the main missions of the cavalry. Their mobility, however, still remains and is often a valuable asset. But mobility is of no use without firepower, for the cavalry fights as infantry. If they carry machine guns to obtain fire power this mobility is cut down. If extra mounts are provided for these guns the man power is thus cut down for the number of mounts used. It is a vicious circle and the advantages of the introduction of the T. S. M. G. is readily apparent.

(12) For airplanes; affording a lateral, elevated or rear fire, as desired in air combat, and permitting a better defense of the plane after a forced landing, thus affording time for its repair, dismantling, destruction, or defense while awaiting relief.

(13) For augmentation of fire power of all troops who normally carry the pistol, thus assuring ample ammunition supply.

(14) For arming engineers, signal, and other special troops, primarily for their own protection.

(15) For landing operations. The seizure of a beach head against organized resistance is a matter for serious consideration. The enemy are under cover and the landing force is under a concentrated fire long before landing is accomplished. In many respects it is similar in its phases to the infantry attack. It is the final punch that is going to count and reduce casualties. Fire superiority must be gained, and this is impossible until the first wave hits the beach. The presence of the T. S. M. G. under these conditions will be invaluable.

(16) Finally; for all purposes where a maximum flexible fire of heavy stopping power, at short and mid ranges, is desired from a minimum number of men, with a minimum loss of time for commencement of its delivery.

SPECIAL DEFENSIVE USES

The Thompson sub-machine gun also has a definite place in the support of those arms, who at present, due to their low defensive fire power, are practically defenseless, when attacked at moderately short ranges, such as:

- (1) Emplaced machine guns.
- (2) Infantry howitzers and 37 mm. guns.
- (3) Pack howitzers and other mountain artillery.
- (4) Field artillery (75 mm. guns and 105 mm. howitzers).

Owing to normal demands on the infantry, in or approaching combat, proper support of the above special arms is sometimes lacking or very inconvenient, and it is always a decided advantage to be able to properly protect them with as few men as possible, thus making a saving of man power for the infantry. The use of the Thompson gun in such cases can readily render such arms self-supporting, at lowest possible cost in man power to the infantry.

REASONS WHY THE THOMPSON GUN SHOULD BE ADOPTED

A study of the campaign and actions of the Civil War, and down to and including the World War, reveals the fact that successful attacks and defenses, with inconsiderable exceptions, always included the range zone of the Thompson gun, and practically all decisions were actually obtained within such range zone.

It further appears that more frequently than not the entire engagement, from beginning to end, occurred within the range zone of the sub-machine gun. Its great value is therefore apparent.

The ability of the Thompson gun to actually deliver a devastating fire at the ranges where hits are mostly made; its effect in gaining fire superiority; and, holding that superiority at ranges where its loss would be disastrous, cannot help but raise the morale of the attackers, with a corresponding loss of morale to the enemy.

Its position in the fire fight and its special uses, neither duplicate nor infringe on the functions of the high powered arms, nor on any foreseen development of those arms.

It is an additional weapon of low power, which meets and satisfies conditions that cannot be satisfied and met by high power weapons, owing to their inherent limitations, and the inescapable conditions of short range combat.

To produce its full effect, it requires no change in organization, no special ammunition supply, nor in fact any particular effort other than the furnishing of the gun, magazines, belt and pouch equipment for its one man unit.

BUSH WARFARE

The first extensive field use of the Thompson sub-machine gun occurred in our recent campaign in Nicaragua (1928), against well armed, organized banditry, and was made almost imperative by field conditions which caused the absence of just such a gun to be a self-evident handicap.

The demand for this gun in Nicaragua originated with the troops in the field in the Northern Area, who, from past experience on mail guard duty, had a particularly clear idea of just what results could be obtained from it, under these most trying conditions of terrain and climate.

The winding, wooded Nicaraguan trails, through very rough and mountainous country, where deep ravines, ridge trails, only wide enough for one man or animal to pass in single file, impenetrable forests, and impassable swamps, usually bordered the almost impassable trails, knee deep in mud, made the safe advance of our troops by the normal method of flank patrols for security, entirely impracticable or impossible. This left only one safe mode of advance practicable; to lay down a sweeping automatic fire on each possible enemy ambush location, at such range as to prematurely force the bandits to disclose their presence, and thus deprive them of the advantage of surprise, in their carefully prepared ambushes.

A short burst from a Thompson gun under such conditions, always drew a return fire from an ambushed enemy, and at such a range as to give our better marksmen all the advantage. Many ambushes were thus prematurely disclosed, as the bandits when thus fired upon always thought they had been discovered and immediately returned the fire, oftentimes when we did not think anyone was anywhere near, the protective fire having been simply laid down as routine, by members of the advance guard, on a dangerous location along the trail. The pack trains that accompanied all patrols of any size, assured an ample ammunition supply.

The above plan has two weaknesses, which were however greatly overshadowed by the successes gained. First: expert supervision had to be constantly maintained over such covering fire, principally to avoid unnecessary expenditure of ammunition. Second: troops so advancing under a protective fire from their own front line, certainly surrender any advantage they might have otherwise procured by surprise. However, the information service of the bandits was such that no daytime move could be made anywhere without their knowledge as to the exact location of our patrols at all times.

The only surprise attacks that could ever be made successfully against the bandits had to be very carefully planned, executed over known trails or with reliable native guides, and could then only be successful when commenced after midnight and to points that could be reached before daylight of the next morning. Of course, in such movements, no protective fire was used, but the Thompson gun was most effective when the bandit camp was reached and sudden heavy fire required before the bandits could melt away into the surrounding country.

When it is remembered that all bandit contacts in Nicaragua were commenced and completed at ranges of only from twenty to one hundred yards, the immense value of the Thompson gun can readily be appreciated, either

for combat patrols, guards for bull-cart and pack trains, and for the protection of garrisoned towns.

In such bandit contacts, the terrain absolutely prohibited pursuit except by fire, thus the maximum fire power that could be laid down in the minimum space of time definitely decided the losses inflicted on the enemy.

The Thompson gun was found to be especially adaptable to mounted patrol duty, as its size and weight made it easily carried and handled, while the saddle bags formed an excellent and safe receptacle for reserve ammunition.

For such mounted duty the fifty and one hundred round magazines were particularly adaptable, and assured an initial fire power, without re-loading, that often decided the issue, or saved considerable loss.

Leather gun cases can be nicely utilized on mounted duty, but canvas cases are impracticable for tropical duty, as the damp climate shrinks the canvas and holds moisture when the gun should be kept dry. Cases of any kind for use of foot troops armed with the Thompson gun are impracticable and useless, often actually a handicap, and if proper attention is given the gun daily, covers are not required.

NOTES ON THE GEOGRAPHY OF CHINA

By FIRST LIEUTENANT W. L. BALES, U. S. M. C.

THE PROVINCE of Shansi is most noted for its mineral wealth. It has sometimes been referred to as the "Pennsylvania" of China. Coal, bituminous and anthracite, of excellent quality and seemingly unlimited quantity, is found in northern and eastern sections of the province. There is an abundance of iron ore and the iron industry is very old—probably the first efforts of the Chinese in iron work was in Shansi. A considerable amount of salt is extracted in southern Shansi. The mineral wealth of Shansi is not so well known but deposits of coal, iron, and petroleum are known to exist. Excellent building stone abounds throughout the entire region.

This central section of the basin of the Hoang Ho occupies an exceptionally important place in Chinese history. The Wei Valley is usually regarded as the cradle of the Chinese race. Here the Chinese nation had its origin and developed those peculiar traits that have characterized it through many centuries. It is a valley singularly well protected by natural features. To the east the famous Tungkwan gorge, just below the junction of the Wei with the Hoang Ho, prevented an invasion from the lowlands. To the south the lofty Tsingling Shan formed an essentially impassable barrier. On the west the wild mountainous regions with few accessible passes rendered the valley secure, while the loess plateau to the north cut up by a labyrinth of chasms, made the success of an invasion from that quarter exceedingly remote. Thus shut off the Chinese developed that spirit of isolation that has characterized them down to the present century.

WHERE YELLOW IS THE SYMBOL OF POWER

As the Chinese multiplied and prospered, they pushed beyond the valley of the Wei in all directions, until, at one time or another the whole of southeastern Asia bowed to the sway of the sons of Han. From the beginning they were an agricultural people and the close contact with the fertile, all pervading and inexhaustible loess soil, very naturally led them to the concept that the world was yellow loess, and yellow the color *par excellence*. Yellow became the symbol of privilege, greatness, power, and all that was enduring in this world. Their designation for the imperial office became "Hwang-ti" or "Lord of the Yellow Earth", the mighty river traversing the land was the "Yellow River", and "Yellow" the sacro-sanct color since a time when the memory of man runneth not to the contrary. Perhaps even our concepts of the "Yellow Race", and the "Yellow Peril", might be traced through the labyrinth of word origins to loess.

The eastern or lower section of the Hoang Ho Basin includes the province of Chihli and parts of Shantung and Honan. The chief physical feature of this region is the great lowland extending over much of all three

provinces. This lowland region seems to have been at one time a part of the Yellow Sea and to have been built up by deposition of silt from the rivers, principally the Hoang Ho. The agricultural products are much the same as those found in the western provinces with the addition of rice. Practically the whole plain is brought under some degree of irrigation, wells being used where water can not be brought from the rivers. The soil, being in the main a re-deposited loess, is exceedingly fertile and supports an enormous population. At least two crops a year are harvested and very often three crops are secured. Much of the plain is subject to floods resulting from the breaking of the dikes along the Hoang Ho and other rivers of the plain. The flooded districts drain off very slowly, a flooded district often requiring two years to drain. This is due to the exceeding flatness of the country and, to the peculiar characteristics of re-deposited loess described by Richthofen.

The mineral wealth of the three provinces is considerable. Coal and iron are found in all three provinces. However, it is only in parts of Shantung and Chihli that extensive developments have been undertaken. Salt is evaporated from sea water along the coast and has given rise to a considerable industry.

THE ILLUSIVE "FORESTS" OF CHIH LI

There are no forests in the three last named provinces. On crossing the great Chihli plain for the first time one readily gets the impression of a well wooded region. This illusion is due to a combination of circumstances. It is one of the most densely populated regions in the world. Villages are as numerous as farmhouses in the farming districts of the United States. Trees are found in all villages, along many of the dikes, and along some of the roads. The extreme flatness of the country and the absence of any conspicuous landmarks, greatly restrict the view, so that from most any point in the plain it appears that one is surrounded at no great distance by woodlands. But, as one travels along, the woodlands are never reached and the scene seldom changes. Mile after mile the view alters so little that after a time it becomes depressingly monotonous.

Communications throughout the Hoang Ho Basin are poorly developed. The waterways are not used to any degree comparable to those in the Yangtze Basin. The Chinese are particularly persevering in their efforts to utilize watercourses for traffic, but with all their persistence the Hoang Ho has not become a commercially important waterway. Boats and rafts are used on the river but the losses are great. The labor expended and the risks entailed are out of all proportion to the benefits. Most of the rivers crossing the Chihli plain are used for freighting in certain seasons. The Grand Canal, running from Tientsin to Hangchow, is still a sizable factor in the trade of the lowlands. The Lwan Ho, in northeastern Chihli, though strictly speaking

not included in the basin of the Hoang Ho, is navigable for junks from Jehol to the sea. A recent estimate placed the number of junks on this river at 3,000.

Railroad development has progressed further in North China than in the Yangtze Valley and South China. This has been due in some measure to the limited water transport in the north. There are four trunk-lines leading from Peking and Tientsin: The Peking-Mukden, Tientsin-Pukow (Tsin Pu), Peking-Suiyuan (Kin Sui), and Peking-Hankow (Kin Han). The first of these lines connects with the railway net of Manchuria and thence with the Trans-Siberian giving through rail connection with Europe. The Tientsin-Pukow line joins the important North China port of Tientsin with the lower Yangtze and Shanghai. The Peking-Suiyuan Railroad extends from Peking to Paotow on the Hoang Ho, running for more than 300 miles along the southern border of the Mongolian Plateau. The Peking-Hankow Railroad joins Peking with the Wuhan cities (Hankow, Hanyang, Wuchang) the great river port on the Yangtze. There is a fifth trunk-line which serves the Hoang Ho Valley—the Lung-Hai. It extends westward from Hsuechow, on the Tientsin-Pukow, following roughly the south bank of the Hoang Ho almost to Tungkwan Gorge, where the provinces of Honan, Shensi, and Shansi converge. Several short spurs branch off from the above lines, most of them leading to mining developments. From Shihkiach-wang, on the Peking-Hankow Railroad, a short line leads to Taiyuanfu, the capital of Shansi. It serves a very rich mineral region but its general utility is somewhat restricted by the fact that it is meter gauge, necessitating the trans-shipment of all freight at the junction with the main line. A railroad of much importance is the one running from the port of Tsingtao across Shantung to Tsinanfu on the Tientsin Pukow line. Numerous spurs lead from it to important mining developments in the Shantung peninsula.

RAILROADS IN CENTRAL HOANG HO

The central Hoang Ho region is now approached by three somewhat parallel railroads. The Peking-Suiyuan reaches the great northern bend of the river at Paotow and has tapped the Mongolian trade. Unfortunately the unsettled political situation has prevented this railroad from being as important commercially as it should be. It is proposed to continue this line on up the Hoang Ho to Lanchowfu, the capital of Kansu. The meter gauge railroad mentioned above as leading to Taiyuanfu, is the second of these westward tending lines. It is not likely that it will ever be of more than local importance or will open up much more territory than it does now, at least not until the track is made standard gauge. However, it has contributed much to the recent development of Shansi and its influence will become more pronounced with the coming of peace to China. The Lung-Hai railroad promises to become one of the most important in China, if not in the

world, when it is fully developed. It is proposed to extend it on to Sianfu, Shensi; Lanchowfu, Kansu; and, ultimately through Sinkiang or Chinese Turkestan, to connect with the Russian system in Central Asia. This will give a much shorter rail route from China to Europe than the present Trans-Siberian, and besides, will open to exploitation a region of great natural wealth.

The highways of North China are poor indeed. Automobile roads of the kind prevailing in the United States are unknown. However, automobiles are used to a surprising extent. A road must be very bad to be impassable to the cars of today. In the lower Hoang Ho valley there are several roads, some of them along the top of the dikes, that are called motor roads. The province of Shansi has some fairly good motor roads and they are kept in better condition than any other roads in North China. The main Shansi road leads from Tatung, on the Peking-Suiyuan Railroad, south through the center of the province to near the extreme southwest tip at Tungkwan. It is possible to drive a car from Peking to Kalgan though it is not often done. From Kalgan motor routes, they could hardly be called motor roads, lead to many parts of Mongolia. Such is the nature of the Mongolian Plateau, that at certain seasons cars can go across the country almost at will and without regard to roads. There is considerable motor traffic from Kalgan to Urga, capital of the Soviet Republic of Mongolia. It is also possible, except during the summer rains, to drive from Kalgan to Paotow on the Hoang Ho, and on up the river to Wuyuan, Ninghsia, and Lanchowfu, capital of Kansu. From Lanchowfu there is a motor road west to Tangar, near to the great lake Koko Nor. East from Lanchowfu there is a motor road to Sianfu in Shensi, and on down the right bank of the Hoang Ho into Shantung. There are several motor roads, except when it rains for a few days, in Honan, Shantung and Chihli provinces, so that it is possible to drive from Peking to most of the principal towns and cities in these provinces. However, it must be remembered that "motor roads" in China are not the same as we are accustomed to consider them in the United States. At best they are simply graded,—no metaled surface,—and during the rains of July and August, are practically impassable. They are seldom repaired and motoring can hardly be classed as a pleasant recreation on the roads of China.

SAILING WHEELBARROWS

Aside from the railroads and the limited use of motor cars and trucks mentioned above, the prevailing forms of land transportation throughout the Hoang Ho Basin are wheelbarrows, two-wheeled carts and pack animals. In some sections in the province of Honan, four-wheeled carts are quite commonly seen, but this seems to be the only province in all China where four-wheeled carts or wagons are in general use. In the plains the two-wheeled carts are frequently pulled by man-power. The wheelbarrow is seen every-

where and they are frequently used over long distances. The Chinese are quick to adapt means to an end in most instances, and they often rig a sail to their wheelbarrows which makes the pushing a little easier—when the wind is right. It is a strange sight to see a caravan of fifty or more wheelbarrows moving across the plain under full sail. Throughout the Hoang Ho Basin the camel is a great factor in transportation. They are seen everywhere in winter, though they are not particularly adapted to the heat of the lowlands during the summer months and are seldom seen there.

In the towns and cities coolie carriers are much in evidence. Rickshas have only come into general use in China during the past twenty-five or thirty years. Now they are everywhere and offer a particularly comfortable, cheap, and expeditious means of transport for short distances. In Shansi, however, where the roads are better, it is not uncommon for a journey of several hundred miles to be made by ricksha, and the distance that a good ricksha coolie will make in a day is phenomenal. In the large cities, as Peking and Tientsin, electric tramways are in use and they seem to be particularly popular with the Chinese.

All the cities and towns of any importance in North China are connected by telegraph. Telephone systems are in operation in most of the cities. The Chinese Post Office has had a sound growth and has continued to function in spite of the constant civil war. There is scarcely a town throughout the Hoang Ho Basin so remote that it is not within fifty miles of a post office.

THE YANGTZE BASIN

The most arresting feature of this great region is the mighty Yantze Kiang. (Kiang is another Chinese term for river, and prevails in Central and South China as the term "Ho" prevails in North China). It is the most important river in China and one of the great rivers of the world. It flows through the heart of China and, while it has not occupied so prominent a place in the history of China as has the Hoang Ho, it is easily the river par excellence of the present and is destined to be of far greater importance in the future of the country than the Hoang.

The basin of the Yangtze includes a little less than half of the entire area of China proper, and the total area of the basin, including the part of Tibet that it occupies, is usually estimated at 750,000 square miles. It is the most populous region in China, and supports a greater range of industry than either of the other great geographical divisions of the country. This basin extends from west to east across China, very wide on the western border of China and narrowing as it approaches the sea. The northern watershed has been indicated in the description of the Hoang Ho Basin. The southern watershed is more definite than the northern and follows more closely the provincial boundaries. Beginning in the west the divide follows closely the boundary between China and Tibet to the border of Yunnan. On entering Yunnan

Province the divide continues south some 300 miles and then bears easterly to near Yunnanfu. Thus far the divide has separated the waters of the Yangtze from those of the Mekong and Red rivers. The next sector separates the Yangtze from the Si Kiang (West River) basin. The divide bears northward from Yunnanfu into northwestern Kweichow, near the city of Weining, and thence easterly across Kweichow to the converging point of the provinces of Kweichow, Hunan and Kwangsi. It now follows the general trend of the Nanling range and marks the boundary line separating the provinces of Hunan and Kiangsi to the north from Kwangsi, Kwangtung and Fukien to the south and east. On the border of Chekiang the watershed ceases to follow the provincial boundaries and bears northward into the province of Anhwei. The general trend of the mountain range, however, is across the province of Chekiang to the coast opposite the Chusan Islands. This serves to form a small basin around Hangchow Bay that is not in reality a part of the Yangtze system. The main features of this relatively small area are so similar to those of the Yangtze Basin that a general survey is justified in including it in the Yangtze region. It is quite probable, anyway, that the Yangtze once flowed into Hangchow Bay, thus draining the greater part of northern Chekiang.

TWELVE THOUSAND MILLS OF WATERWAYS

The general characteristics of the Yangtze Basin may be listed as follows:

- 1.—A wonderful network of waterways converging on the central artery, the Yangtze River, and furnishing easy communications over a wide area. Not less than 12,000 miles of waterways are used for navigable purposes in this basin.
- 2.—The climate is favorable and the rainfall fairly constant over the whole region. It is rather hot in summer but is not subjected to such extreme variations in temperature as the Hoang Ho region, and the winters are mild. Famines seldom occur in this basin as a result of drought.
- 3.—The main products are tea, rice, cotton and silk.
- 4.—Animal transportation is exceptional. Where water transportation is not available, coolies take the place of beasts of burden. Domestic animals do not play the part in the economy of the people that they do in North China.
- 5.—The mineral wealth of the basin is not believed to be as great as that of the northern and southern parts of China, but it is quite extensive and offers prospects of considerable development.
- 6.—All the lakes of any consequence in China are in this basin and they exercise a most important influence on the economic life of the region.
- 7.—It is the manufacturing region of China.
- 8.—It is the region of the great Treaty Ports of China.
- 9.—In the Yangtze Valley is the greatest concentration of wealth in all China. As the Hoang Ho is historically *the* river of China, so is the Yangtze economically and potentially, *the* river of China.

For a more comprehensive view of this basin it is well to consider in some detail the various stages of the Yangtze River. It rises in Tibet, not

far from the source of the Hoang Ho. The exact source of the Yangtze is not fully known, but it is near the 91st meridian, and at an altitude of about 16,000 feet above sea level. The first four hundred miles of the river's course is generally east and the fall comparatively slight, averaging about six inches to the mile. It then turns south, leaving the Tibetan Plateau and entering western Szechwan. It is about one hundred and fifty miles from where the river leaves the plateau to the point where the ancient road to Tibet crosses the river near Batang, and in this sector the fall averages some 45 feet per mile. The elevation near Batang is 9,000 feet above sea level. From Batang the direction is south by east to the 100th meridian in the province of Yunnan. It is thought by some geologists that in an early geological period the river continued south along this meridian into what is now the Red River Valley, and through this valley into Gulf of Tonking. However, now the river turns abruptly north for some fifty miles and then sharply to the south again for more than one hundred miles before entering on a prevailing northeasterly course through some ten degrees of longitude to the western border of the province of Hupeh. From the border of Hupeh to Nanking the river's course is somewhat like a mighty "W". First it flows southeast to Tungting Lake; then, northeast to Hankow; southeast to Poyang Lake; and, northeast to Nanking. From Nanking it flows very nearly east to the East China Sea.

From the Tibetan Plateau to Pingshan, head of junk navigation, the Yangtze flows through an extremely rugged region, the valley floor being seldom wider than the actual river bed. The fall from Batang to Pingshan, a distance of about a thousand miles, averages 8 feet per mile. This section of the river is called by the Chinese the "Kin-sha Kiang" or the "River of Golden Sand".

THE GORGES OF THE YANGTZE

The main navigation of the Yangtze is considered to end at Suifu, 33 miles below Pingshan, and at the junction of the Yangtze with the Min River. Suifu is about 1700 miles from the sea and the elevation here is usually reckoned at 1,000 feet above sea level. Chungking, some 1550 miles from the sea, is the head of steam navigation on the Yangtze, and it is about 650 feet above sea level. It is the farthest inland of all the treaty ports of China. Below Chungking begin the celebrated Yangtze Gorges and they extend to Ichang, a distance of almost 600 miles. Ichang, at the mouth of the gorges, has an elevation of 135 feet and is 960 miles from the sea. Steamers of considerable size enter Ichang, but only specially constructed steamers can ascend to Chungking. Hankow is 600 miles from the sea and large ocean going steamers enter this port. The tides are felt as far up as Wuhu, 250 miles from the sea. The Yangtze is subject to extraordinary variations in level, particularly in its upper reaches. At Chungking the difference between average low water and average high water is fully 100

feet. The river is highest during the summer months, August, usually being the month of maximum high water.

Taking the Yangtze as a whole it may be considered in four stages or steps. The first and shortest is across the Tibetan Plateau at an elevation between 15,000 and 16,000 feet. The second marks the descent from the plateau in the neighborhood of Sogongamba to the Szechwan basin near the mouth of the Min River. From the Tibetan Plateau to the Szechwan Basin is a succession of lofty parallel mountain ranges leading off from the Kuen Lun in a southerly direction. For several hundred miles the Yangtze flows parallel with these ranges down into Yunnan. These mountains lose much of their elevation in southern Szechwan and northern Yunnan and seem, in a sense, to lose themselves in the Yunnan Plateau. In northern Yunnan the river bears easterly cutting across the lower limits of these parallel ranges to the Szechwan Basin. The whole of the west Szechwan region is wild and in the main unexplored except along a few generally traveled routes. The third stage of the Yangtze is across the Szechwan Basin, called by Richthofen, the Red Basin. This is the last upland stage of the great river. The river leaves this basin through the famous gorges and from Ichang to the sea, or fourth stage, it flows through lowlands, except for a few low hills as those near Kuling and Nanking.

The affluents of the Yangtze are numerous and some are of considerable importance. On the north the first of these rivers is the Yalung Kiang. It rises in Tibet, between the Yangtze and Hoang Ho and flows for nearly a thousand miles roughly parallel with the Yangtze. It has not been fully explored but it does not appear to be navigable in any part of its course. The next river of consequence is the Min. It is considered by the Chinese to be the continuation of the Yangtze proper instead of an affluent. It is navigable for junks as far as Chengtu, capital of Szechwan. This river is extensively utilized for irrigation, particularly in the Chengtu plain. Continuing east, the next big river is the Kialing which rises in Kansu, crosses southwestern Shensi, and thence across eastern Szechwan to the Yangtze at Chungking. It is navigable for junks as far as Paoning in northern Szechwan. Both the Min and Kialing are very swift streams and navigation is very difficult and dangerous. The largest tributary of the Yangtze is the Han. It rises in southwest Shensi and flowing somewhat parallel to the Yangtze, crosses south Shensi between the Tsingling Shan and Tapa Shan into the province of Hupeh, and enters the Yangtze at Hankow. Hankow is on the left bank of the Han and Hanyang is on the right bank, while on the south bank of the Yangtze, opposite them, is Wuchang. The three together have of late borne the name Wuhan. Wuhan is without doubt the second city in China. The Han river is navigable from Hankow to Hanchung, a distance of about 900 miles. Through Shensi the navigation is very difficult. From Hankow to Hanchung requires from 60 to 100 days, while the down-stream

voyage can be made in 15 days. In its lower course through Hupeh the river is heavily diked as the river bed in some places is 22 feet above the surrounding plain.

After the Han there is no river of importance entering the Yangtze from the north until we reach the Grand Canal. Some of the waters of the Hwai river flow into the Yangtze through this canal. The Hwai is a very peculiar river. Its entire lower course is a maze of canals and lakes, and in flood season it discharges into the sea in several places as well as into the Yangtze. It also receives the overflow from the Hoang Ho when that river is in flood.

A GREAT NATURAL RESERVOIR

On the south side of the Yangtze there is no tributary of any particular consequence for the first 1800 miles of its course. The Wu Kiang is the principal river of the province of Kweichow and enters the Yangtze a few miles below Chungking. It is navigable below Szenanfu for junks during the flood season. Its course is marked by many gorges and rapids as it cuts its way down from the Kweichow tableland. The rivers of the province of Hunan flow into the Yangtze from the great Tungting Lake. In summer this lake is 75 miles long by 60 miles wide, and it is so close to the Yangtze that when the river is in flood it over-flows into the lake. Tungting Lake thus serves as a great reservoir which tends to reduce the destructive force of the Yangtze when it is in flood. Normally the lake is fed by the Siang Kiang which flows from south to north through the eastern part of Hunan, and by the Tsu Kiang and Yuen Kiang which drain the central and western parts of the province respectively. The Siang Kiang is navigable for small craft to the border of Kwangtung and through its affluents, to the border of Kwangsi. It is navigable for steamers as far as Hengchow. A branch of this river is joined to the Kwei Kiang or Cassia River in Kwangsi, by a canal, thus connecting the Yangtze and Si Kiang basins. This canal was constructed in the reign of the great Chih Hwang-ti, builder of the Great Wall, in the year 214 B., C., and is perhaps the oldest canal now in use in the world. The Tsu Kiang has many rapids and is navigated with great difficulty, mostly by rafts. It provides an outlet for considerable timber from southwestern Hunan. The Yuen Kiang rises in Kweichow and is navigable for small craft well into that province and through a tributary, the Pei River, into southeastern Szechwah. The old Imperial Highway from Peking to Yunnanfu entered Kweichow through the valley of the Yuen Kiang.

Tungting Lake is a center of great commercial activity. A system of sluices adapt it to navigation in all seasons—it is hardly more than a marsh in winter—and thousands of junks carrying rice, timber, salt and coal, traverse it unceasingly. Numberless rafts and houseboats are found on the lake. Some of the rafts are more than 300 feet long and whole villages find homes on them, the people spending their whole life on the lake. The lake is

surrounded by a network of canals but it is subject to such variation in level that few villages are found on its shores.

Very similar to the drainage of Hunan is that of the province of Kiangsi. The rivers of this province flow into Poyang Lake and thence into the Yangtze. These two great lakes have a marked stabilizing effect on the mighty river and serve to check widespread inundations of the surrounding plain. The principal river of the province is the Kan Kiang which enters Poyang Lake through several channels. It receives, during its course from the Kwangtung border, several tributaries, most of which are navigable after the fashion of the Chinese. The Kan Kiang itself is navigable for small junks as far as Nananfu on the Kwantung border. Poyang lake is about 90 miles long by 20 miles wide and it is dotted with small islands, most of them wooded. Its northern banks are rather steep and afford many picturesque village and temple sites. Near the northwest shore of the lake is the famous summer resort of Kuling. There is a temple not far from Kuling that was once the home of Chu Hsi, one of China's most distinguished philosophers. It is much frequented by pilgrims from all China. Poyang Lake is often visited by severe storms, and at such times the navigation of the lake is very dangerous.

Below Poyang Lake the Yangtze receives no tributaries of any importance. It is thought by some that in former times the river turned due east in the vicinity of the present city of Wuhu and flowed into Hangchow Bay. The entire plain from Hangchow Bay north has been built up by the Yangtze and Hoang rivers, and in the process these rivers have undoubtedly entered the sea in many places. Within historic times the city of Suchow, just west of Shanghai, was on the coast. The plain at the mouth of the Yangtze is continually pushing out to sea as a result of the enormous deposition of silt brought down by the river. Tsungming Island, at the mouth of the Yangtze, has been entirely formed by silt, and the river channel along the north shore of the island is becoming yearly less navigable. It appears to be a matter of but a few years until this island will be connected with the mainland. At the present time it has an area of about 240 square miles and supports a population of some 2,000,000.

Seven of the provinces of China lie wholly in the Yangtze Basin, or so nearly so that it is convenient to so consider them in any general description of this region. These provinces are Szechwan, Kweichow, Hupeh, Hunan, Kiangsi, Anhwei, and Kiangsu. Besides these seven provinces, portions of Kansu, Shensi, Honan, and Yunnan, lie within the watersheds of the Yangtze. In a general way these provinces may be considered in two groups, the upland and the lowland. In the upland group are the provinces of Szechwan and Kweichow, and the adjoining portions of Kansu and Yunnan; while the lowlands comprise the rest. This division is perhaps more convenient than accurate, as the lowland group are not all low by any means. All of these

provinces contain many hills, some of them of sufficient altitude to be dignified by the name of mountains. However, if the mean elevation is considered this grouping is not far wrong.

A PROVINCE AS LARGE AS TEXAS

The province of Szechwan is the largest, most populous, and in many respects the most interesting of the provinces of China. In area it is hardly as large as the state of Texas, and the population is estimated to be not less than 50,000,000. The climate, products of the soil, and the mineral resources, are exceedingly diversified. Its actual wealth is very great and its potential wealth is beyond reckoning. Szechwan comprises about one-third of the Yangtze Basin within the limits of China proper. With the exception of a very small corner in the extreme north which drains into the Hoang Ho, it is completely drained by the Yangtze. The province is bordered on the west and northwest by the lofty Tibetan mountains, on the north by the Min Shan and Tapa Shan, on the south by the Kweichow and Yunnan tablelands, while on the east it is inclosed by the relatively low mountains separating it from the lowland region mentioned above.

The western part of the province, something like a third of the total area, is separated politically into the Special Administrative District of Chwan pien, with administrative headquarters at Tatsienlu, though the district is still subordinated to the provincial government. Physically, the province may be divided into two regions, roughly equal, the dividing line following the mountain range running north and south immediately west of the Min River. The western half is exceedingly mountainous, particularly the northern part, and is the region called by Richard the Szechwan Alps. The population of west Szechwan is relatively sparse and is composed for the most part of aborigines, Lolos, Miaotze, Sifan, and Tibetan tribes. The whole region is wild, difficult of access, and has been little explored. There are many rivers, all flowing generally south, but scarcely a one has been explored through its length. Much of this region is well wooded. The mineral wealth is supposed to be very great but little is definitely known of its extent.

THE GREAT RED BASIN

The greater part of the eastern half of Szechwan was once a great inland sea or lake, and it is now an immense basin of red and green sandstone. It was called the Red Basin by Richthofen from the red sandstone that predominates over the whole area. The basin is generally hilly with a few plains here and there, the largest being the Chengtu Plain. Underneath the sandstone formation is a layer of coal. Richthofen says that the whole basin is a vast coal field, but that it is generally deep and inferior to Shansi coal. He also estimated that the quantity of coal in Szechwan is as great as

in all the rest of China. Some iron is found and it is worked on a small scale.

The Red Basin is one of the most favored regions in all China. The climate is mild, in the valleys and toward the south it is semi-tropical, and the rainfall is abundant. Roads are numerous and frequently paved with flagstones, while the many bridges are reputed to be the best in China. The basin is free from the fierce winds that are so common in the north and on the Yunnan Plateau. Heavy fogs are of such common occurrence that it is a saying among the Chinese that: "In Szechwan the dogs bark when the sun shines".

Village life is not so characteristic of Szechwan as in other parts of China. The Red Basin is intensively cultivated and the rural population is very great, but the farmers live in farm-houses scattered over the countryside rather than in village. Another characteristic of this basin is that the hills are cultivated right to their tops, whereas in the lower Yangtze valley the hillsides, except where they are terraced, are not generally cultivated. Three crops a year is the rule in the Red Basin, and so favored is this region by nature that it has never known a famine due to floods or drought. The basin supports an enormous population. Szechwan is by far the most populous of the eighteen provinces, and the bulk of this population is in the Red Basin, or less than half the area of the whole province.

SALT WELLS 2,000 FEET DEEP

A great industry in Szechwan is the production of salt. The center of the salt region is a short distance north of Suifu. The salt is obtained from brine that is taken from thousands of wells, some more than 2,000 feet deep. Many of these wells have been producing for centuries. In some sections when a well stops producing the Chinese run water into it and after a time pump it out as brine. Many of the salt wells yield natural gas also, and it is used extensively to evaporate the brine. The Chinese have been utilizing natural gas for generations and they lead it from the wells to the evaporating tanks in pipes made from the bamboo.

While the whole of the Red Basin is highly productive, the garden spot of Szechwan is the Chengtu Plain, so-called from Chengtu, the provincial capital, situated near its center. The plain is ninety miles long by forty miles wide in its longest and widest limits, and has a total area of about 2,400 square miles. It supports a population of more than 5,000,000 or more than 2,000 to the square mile. Long after the rest of the Red Basin had ceased to be a great inland sea, this plain was evidently a lake. When it drained off it left an exceedingly fertile plain. Archibald Little says that it appears to be as flat as a billiard table, but that it has a very decided slope to the south of some 700 feet in the forty miles from Kwanhsien to Chengtu.

AN IRRIGATION SYSTEM 2,100 YEARS OLD

The Min River breaks from the mountains at Kwanhsien and enters the extreme north end of the plain. At this city is the head-works of one of the most ingenious irrigation systems in the world. The water is diverted from the river into the main irrigation canal by means of a moveable "barrage" made up of strings of boulders incased in plaited bamboo. The main channel skirts the northern border of the plain and laterals lead from it to the entire plain. A significant feature of this irrigation system is that it was designed and completed more than 2,100 years ago, and that it has been maintained in its original form down to the present. Of all the public works of any magnitude in China, this irrigation scheme is perhaps the only one that has never been allowed to fall into disrepair. Likewise this plain has never been flooded as so often happens to many similarly situated regions throughout China. This has been due to strict adherence to the dictum of Li-ping, initiator of the irrigation scheme, and his son Li the second, who completed it: "Dig deep the bars; keep low the dikes". As a result the Min has been kept under control. Such a principle would probably have availed more than diking if applied to some of the other rivers of China.

As in most of the provinces of China, agriculture is the chief wealth of Szechwan. The main products are opium, silk, tea, rice, sugar, hemp, vegetable wax, indigo, shellac, oranges and many other kinds of fruit. Timber and medicinal plants come from west Szechwan. In the mountains sheep, goats and Yaks are reared. In the north and in the uplands of the southwest some wheat and other cereals are produced on a small scale. A few horses are reared in the north.

Most of the trade between China and Tibet passes through Szechwan, the frontier town of Batang being particularly favored with this trade. Brick-tea is the big item of export into Tibet. Formerly Szechwan furnished Tibet with almost all its tea, but in recent years the Indian teas have cut into the market. This has been due in part to the poor quality of the brick-tea resulting from the increasing practice of the Chinese tea merchants in adulterating their product. The great artery of trade with the rest of China is the Yangtze. Steamboats ascend to Chungking, one of the Treaty Ports of China. In the past year or so motor-boats have been running as far up as Suifu. The possibilities of trade in Szechwan have scarcely been touched. With a reasonable degree of political stability in China the commercial exploitation of Szechwan offers phenomenal prospects. A few years ago a railway was projected from Hankow into Szechwan, but a corrupt officialdom thwarted the work and the succession of wars have rendered this much needed development impossible.

BLUE-EYED CHINAMEN

The Chinese in Szechwan show great variations in their physical char-

acteristics. It is not uncommon to meet distinct Hindoo and Aryan types. Many have blue or grey eyes, and brown hair is frequently seen. During the course of China's varied and turbulent history the province has experienced several devastating campaigns. The Mongols visited the province with fire and sword, while the Manchus in their conquest are said to have exterminated three-fourths of the population. The present population is largely made up of immigrants from the eastern provinces. The Mandarin dialect is the prevailing language in the province.

The lower region of the Yangtze is predominately agricultural. The main products are rice, bamboo, silk, tea, most all kinds of vegetables, and opium. It is also the growing commercial and industrial region of China. Hanyang, one of the Wuhan cities, has extensive iron works, and until quite recently, the principal arsenal in China. Large steamers can come into Hankow, and it has prospects of becoming a great railroad center. Wuhan might be styled the Chicago of China. At the present time the bulk of the intercourse between provinces and districts throughout the lower Yangtze Basin, is by water. Many thousands live in houseboats on the rivers and lakes. Fish culture has been developed to a high degree and contributes much to the food supply. Rice is the staple food of the masses. Domestic animals are not common either for farm work or transportation.

Communications throughout the Yangtze Basin, aside from the water routes, are in the initial stages of development. The valley is connected with North China by two trunk lines of railroad, the Peking-Hankow and the Tientsin-Pukow, which were mentioned in the remarks on the Hoang Ho Basin. In the Yangtze Basin, south of the river, there are altogether about 850 miles of railway. This is divided among several lines. The Woosung-Shanghai-Nanking line is about 203 miles long. It connects to the north, with the Tientsin-Pukow by ferry at Nanking, and to the south with the Shanghai-Hangchow-Ningpo railway, a line 179 miles long. Going up the Yangtze the next bit of railroad is the Kiangsi Railway, a Japanese built road, leading from Kiukiang on the Yangtze, to Nanchang, provincial capital of Kiangsi, a distance of 86 miles. It is planned to continue this road south through the province and on to Canton, following generally the so-called "Ambassador's Road" leading from Canton to Peking.

RAILROADS OF THE YANGTZE VALLEY

The most important railroad south of the Yangtze is the Canton-Hankow line. When finished it will be 750 miles long and connecting with the Peking-Hankow railway, will provide through rail traffic from South China to North China, Manchuria, Siberia and Europe. It will connect the three great geographical divisions of the country, Hoang Ho, Yangtze and Sikiang basins. At the present time the northern division extends from Hankow south to near Hengchow in the province of Hunan. The southern division leads

north from Canton and is said to be near the border of Hunan. Thus, according to recent reports, there remains less than 150 miles to be built before through traffic will be opened between Canton and Hankow. There is a legend that the famous Yuan Shih-kai, first President of China, was vigorously opposed to the building of the Canton-Hankow railway on the ground that should such a road be opened the Cantonese would speedily control all China. There is a branch line 65 miles long, leading off the northern division of this railway at Chuchow to Pinghsiang in western Kiangsi. It has tapped an important coal region and much of the coal used in the Hanyang iron works comes from this region. There are no other railroads in the Yangtze valley. Many other lines have been projected and much talked about but their construction in the present state of the country seems very, very far away.

Considering the enormous area of the Yangtze Basin the improved road mileage is very small. The provinces of Honan and Anhwei are fairly well served by improved roads. The China International Famine Relief Commission has done a great deal of road work in these provinces. In Honan, Wu Pei-fu and later, Feng Yuhsiang, pushed road building with much energy. As a result Honan now has a greater mileage of improved roads than any province in China. Kiangsu has very few improved roads and none of any length. In the northern part of the province and around Shanghai and Hangchow some few miles of road have been opened to motor traffic. The great province of Szechwan has less than 200 miles of motor roads. South of the Yangtze improved roads are far more scarce than to the north. But then it is well to remember that such as they have are of very recent construction. A few years ago there were no roads worthy of the name south of the Yangtze. But now it is safe to say that in spite of the wars and rumors of war, each year shows an increase in road mileage of at least 100%. Every province in China has an ambitious road building program, and the prospects are good that within a few years many hundreds of miles of improved roads will be opened throughout China. The great stimulus is the automobile. There is now not a provincial capital in all China that does not have at least a few motor cars. Highway construction is receiving far more attention than railway construction. This is a very natural development as improved roads can be built without the aid of outside capital while railroads cannot.

INDUSTRY ALONG THE YANGTZE

Industrialization is proceeding at a rapid pace along the Yangtze. Shanghai is a city with many mills and factories employing thousands, and there is scarcely a city of any size along the great river that does not have mills and factories of some kind. Shanghai and Wuhan (Hangkow, Hanyang and Wuchang) are outstanding examples of modern industrial development in China.

The Yangtze Basin supports an enormous population, probably more than 225,000,000. In general, except for the Shanghai area, the mandarin dialect, with variations, prevails throughout the basin. In physical type the Chinese of this region are fairly homogeneous and compared with the Chinese of the Hoang Ho Basin seem to show less noticeable differences than do the Chinese of the Fukien Coast and the Si Kiang region. While it is somewhat idle to generalize on so elusive and variable a proposition as a certain prejudice among the Chinese against foreigners, there seem to be certain regional or geographical elements in the degree of this prejudice. The general level of this prejudice cannot be accurately estimated by the sporadic, and occasionally violent, demonstrations in the great cities, but only its potentialities. Mindful of the fact that the south has never given such an exhibition of violence as the Boxer troubles in the north, yet at the present time, there are indications that the degree of this prejudice lessens as one proceeds north through China. However, such situations often change with great rapidity.

THE BASIN OF THE SI KIANG OR WEST RIVER

The Si Kiang or West River, drains an area of about 200,000 square miles. In common with many other rivers of the country, the Chinese have different names for it in different sections of its course. The maps of this region do not show any of the upper branches of the river under the name, Si Kiang. Perhaps a clearer appreciation of this river may be gained by following it from near the sea to its sources.

The lower part of the Si Kiang, from Samshui to the sea is a great delta with a most complicated network of channels. Samshui is located at the junction of the Pei Kiang, or North River, with the Si Kiang, and is about thirty miles due west of Canton. From Samshui to the sea the most western of the channels is called the Si Kiang and it flows almost due south. It separates Macao from Kongmoon on the mainland. The most northern of the channels leads from Samshui over to Canton, describing roughly the letter "U". Southeast from Canton the channel widens out until it very much resembles a bay, and forms the eastern mouth of the river. However, from Canton to the sea it is called the Chu Kiang or Canton River. It separates Macao from Hongkong. The region included within a radius of fifty miles from Canton is one of the most densely populated in China, and includes a very large house-boat population. Both the Si Kiang and Canton River are navigable for large ships and many of the channels connecting them are navigable for vessels of varying sizes.

Above Samshui the river is navigable for steam vessels to Wuchow, on the border of Kwangsi. It receives here an important tributary, the Kwei Kiang or Cassia River, mentioned before as being connected with the Yangtze system by a very old canal. Above Wuchow the Si Kiang is navigable for junks in favorable seasons, to Nanning, the provincial capital of

Kwangsi. This section of the river is much broken by shoals and rapids and navigation is very difficult particularly upstream. However, the Chinese are the most ingenious and persistent river navigators in the world and a stream carrying enough water to float a boat must be a veritable torrent to stop them.

At Sunchow, about 100 miles west of Wuchow, the Si Kiang receives its biggest tributary, the Hung Shui Kiang or Pak Ho, which, with its affluents, drains northwestern Kwangsi and southern Kweichow. As this river crosses the border between Kweichow and Kwangsi, it is joined by the Ching Ho flowing west from Yunnan and forming the boundary between Kweichow and Kwangsi from Yunnan to the Pak Ho. The Pak Ho and its branches are used extensively for rafting timber down the southern Kweichow.

A few miles above Nanning the Li Kiang, flowing easterly from Tongkin, and the Yu Kiang, flowing southeasterly from Yunnan, join and from this junction to the sea the river is known as the Si Kiang. The Yu Kiang seems to be generally regarded as the continuation of the main stem of the Si Kiang, though its sources are not as distant from the sea as those of the Pak Ho. The old trade route from Canton into Yunnan following the Si Kiang and Yu Kiang.

The Si Kiang Basin includes parts of four provinces, Kwangtung, Kwangsi, Kweichow and Yunnan, and a small strip of Tongkin. The total area of the four provinces is about 391,000 square miles. The basin thus occupies slightly more than half their total area, but in this sketch the whole region will be considered under the heading of the Si Kiang Basin. Generally speaking, one may think of Yunnan and Kweichow as occupying a high plateau broken by many ranges and deep, narrow valleys; and Kwangsi as a transitional mountainous region from the plateau to the lower hills and lowlands of Kwangtung.

THE PECULIAR GEOGRAPHY OF YUNNAN

The province of Yunnan is geographically one of the most interesting provinces in China. It is the second province in size with an area of some 146,000 square miles. The drainage is peculiar. The northern part, about 300 miles long and varying in width from 50 to 100 miles, drains into the Yangtze. The extreme western parts drain into the Irrawaddy and Salween, and thence into the Bay of Bengal. Paralleling the Salween and running through the greatest north and south length of the province, is the Mekong, flowing into the South China sea between Annam and Cochin China. The south central part drains into the Red River of Tongkin, and the eastern part lies in the Si Kiang Basin. Thus six large rivers share the drainage of Yunnan, two of which, the Red River and the Si Kiang, have their origins in the province. Parts of the watersheds of the Yangtze, Si Kiang

and Red River within Yunnan, do not follow any particular range of mountains and in many places are not so readily traced; but those of the Meking and Salween are well defined. These two rivers are walled in by parallel mountain ranges rising more than 7,500 feet above sea level and more than 5,000 feet above the narrow river valleys. The few roads across this narrow belt are particularly difficult.

Yunnan is more noted for its mineral wealth than as an agricultural region. In recent years it has been considered the richest mineral region in all China. The principal minerals are coal, copper, tin, zinc, iron, nickel, salt, sulphur, arsenic, alum, gold, silver, bismuth, tungsten, antimony and platinum. Of these tin and copper have had the most extensive exploitation. For centuries Yunnan has furnished to China and Burma the bulk of the copper used for currency. Coal is found in all but the extreme southwest of the province. Since the railroad into Yunnan was opened to traffic the output of zinc has increased enormously. It is extensively used as an alloy in making copper cash, the common currency throughout China. Of late much of it has gone into "old bronzes" for the tourist trade. Gold has been washed in Yunnan for ages but the methods are wasteful. Mining throughout Yunnan is carried on in a very primitive style and the inhabitants have shown a marked hostility to the introduction of modern machinery and methods.

The principal agricultural products are tobacco, rice, tea, silk, wheat, barley, beans, maize and opium. In the extreme west around Tengyueh a variety of rice known as hill rice is grown on the dry hillsides. It has a reddish color and is said to be preferred by many to the common rice grown in the paddy fields. There are forests in many parts of Yunnan and in the southwest they are of great extent. The climate of the plateau is generally considered to be healthy, but many of the deep narrow valleys are so pestilential that, though exceedingly fertile, the people who cultivate them have to live in the uplands and descend daily to their fields.

About half the province of Kweichow lies in the Yangtze Basin and the other half in the basin of the Si Kiang. It is the most isolated province in China. It is about the size of the state of Missouri and has a population estimated at 7,500,000. The Chinese generally consider the climate unhealthy and there are fewer Chinese in Kweichow than in any province in China. The mineral wealth is thought to be very great but there has been very little development. Some of the mineral found are coal, iron, copper, nickel, silver, asbestos, mica, and nitrate of potash. Agriculturally it is perhaps the most unproductive of all the provinces. Tobacco, cotton, silk, hemp, tea, wheat, maize, rice, sugar, indigo, beans and opium are produced. Timber, nutgalls, wood oil, tung oil and varnish are items of export.

A WILD AND LAWLESS REGION

Kwangsi has been described as "mountainous and void of roads". It is

about equal in area to Nebraska and supports a population of some five million. It is the least populous of the eighteen provinces, with an average of some 66 per square mile. It has long been considered a rather wild and lawless region. The agricultural and mineral products are similar to those of Kwangtung though not developed to the same extent. The principal business of the province is the transit trade from the coast to Yunnan and Kweichow.

Of the four provinces outlined in this section, Kwangtung comprises about one-fourth the total area and three-fifths of the total population. It is generally considered to be the most enterprising and progressive of the South China provinces. This province received the first impact of the Occident on China and as a consequence has been in contact with western nations longer than any other part of China. The lowlands are very fertile but the mountainous sections are rocky and unproductive. Agricultural products are many and varied. Among them are silk, rice, tobacco, tea, sugar, peanuts, hemp, indigo, cassia, camphor, sesamum, and many vegetables and fruits. The oranges of Kwangtung are highly esteemed among the Chinese but are not to be compared with the American product. The mineral wealth is great but little exploited. Coal, iron, antimony, zinc, graphite, silver, gold, tin, lead, copper are found in the province. But it is trade that has made Kwangtung noted. Through Canton flows an enormous trade serving the great hinterland of southwest China.

The population of the Si Kiang region is less homogeneous than that of any great region of China. In Kwangsi, Kweichow and Yunnan there is a large aboriginal element such as the Lolos and Miaotze. Three-fourths the population of Kweichow is said to be aborigines. It seems to be one of the anomalies of Chinese history that during the centuries the Chinese have exercised dominion over these regions they have failed to drive out, exterminate, assimilate, or essentially to change the manners and customs of these people. They still retain their ancient tribal government, language and social organization. Among the strange customs persisting in some of these tribes are, the couvade, divination from the cracks on a heated shoulder-blade, and marriage of cousins. The Chinese appear to have at last settled into a passive toleration of the aborigines.

Among the Chinese of this region there are notable differences. There are the usual dialectical variations, but these variations are more acute among the Chinese of this region and along the coast of Fukien, than elsewhere in China. The southern Chinese are generally much shorter in stature than the northern Chinese. Then there are notable temperamental differences. The inhabitants of Yunnan are reputed to be lethargic and unenterprising to a degree uncommon to Chinese in any latitude. On the other hand the Cantonese, as the inhabitants of Kwangtung are usually styled, are credited with being the most alert and keen minded of all the Chinese. This belief in the superior mental equipment of the Cantonese prevails among foreigners

and it is not at all improbable that it originated with them, though the belief now seems to have wide currency among the Chinese. The Cantonese themselves are quite possessed with the idea. However, it does not appear that this particular section has contributed an excessive proportion of the scholars and distinguished men of China over any considerable period of time. The fact that the revolutionary movement was initiated in the Canton area is very frequently associated with this characteristic of the Cantonese, but it is probable that there were other factors of weight in this situation. It does seem that the Cantonese, and southern Chinese generally, are more volatile in temperament than the northern Chinese. Not infrequently one meets with references to the Chinese as a placid, unemotional people; their inscrutability, and immobility of countenance under stress. Such concepts seem to prevail in the fiction and in the drama of the west. It is as impossible to apply a sweeping generalization to all Chinese as to apply one to all Americans, but insofar as one may venture on a generalization, a more excitable people than the Chinese would be hard to find. This is particularly true in a crowd. Likewise their faces will react quite as expressively to such emotions as stir them as is the case among the peoples of the west. It may be that an impulse that would galvanize a western individual or crowd into action might not produce a stir in China, and the converse is equally true. However, there seems to be sufficient reason to believe that in China the further south one goes the more dynamic are the emotions of the people.

About one-third of the West River Basin lies below the Tropic of Cancer, and the whole of this region is either tropical or sub-tropical in character. Canton is in the same latitude as Havana, Cuba, but the variation in temperature is far greater in Canton.

Communications throughout the West River region are sadly undeveloped. In Kwangtung there is extensive water transport but in the other provinces this is much restricted by the torrential nature of most of the rivers. Railroads are few. In Kwangsi and Kweichow there are none. In Kwangtung the Canton-Hankow railway leads north and the Canton section is now said to be opened to the Hunan border. Canton is connected with Samshui by a line 31 miles long, and with Kowloon by a line 89 miles long. West of the Si Kiang there is a railway 68 miles long from Kongmoon to Towshan, near the mouth of the river. The Swatow railway is a short line, 26 miles, leading from Swatow to Chaochowfu. It is supposed to form a link in the projected coast line from Shanghai to Canton. Yunnan has a single railway leading from Haiphong, on the Tongkin coast, to Yunnanfu, provincial capital of the province. This road is French owned and was opened in 1910. It has not justified expectations in the economic development of Yunnan. This has been due in large measure to the policy of the railroad. The rates are high and, in particular, discriminating. It has led to much bitterness among the Chinese of Yunnan. Traffic is rather uncertain on this

railway during the rainy season due to the frequent landslides. This railway is 289 miles long and the difference in elevation of its termini is about 6,400 feet. There is another French railway from Hanoi, Tongkin, to Dong Dang, on the southwest frontier of Kwangsi. Western Yunnan is approached fairly closely by a Burmese railway to Myitkyina.

Within the past two years there has been a great deal of highway construction in Kwangsi and Kweichow. A very good motor road has been opened across Kweichow from a river port on a branch of the Yangtze to Kweiyang, the provincial capital. From Kweiyang a branch of this road leads near to the Yunnan border and will ultimately continue to Yunnanfu; while another branch leads southeast to the border of Kwangsi. Toward the close of 1928 the governor of Kwangsi was quoted in the Chinese press as saying that he had just completed a tour over some 2,000 miles of motor road in his province and that within two years he would have 5,000 miles.

THE COAST, OR FUKIEN AREA

The coastal region from Ningpo south to Swatow, a distance of some 450 miles with a maximum width of about 200 miles, constitutes a region with rather definite geographical limits. The limit on the land side is practically coincident with the major watershed of the Nanling mountains. These mountains occupy a belt about 400 miles wide and extend from Yunnan to near Ningpo. Thus the coastal region between the Yangtze and Si Kiang Basins is much broken and mountainous. The mountains are not particularly high and few of the passes rise above 1,000 feet, but they are rough and travel in the interior is very difficult. In its general shape this area might be likened to a bow with the watershed the bow and the coast line the bow-string. Southeastern Chekiang, the whole of Fukien, and a small corner of northeastern Kwangtung, lie within this bow. For convenience it is called the Fukien area because the province of Fukien constitutes the major part of it.

Several short rivers drain this region, the more important being the Wu Kiang in southern Chekiang, and the Min River in central and northern Fukien. Their commercial importance is greatly restricted by the numerous falls and rapids along their courses. The coast line from Ningpo to Swatow is much cut up by fjords and islands. While these indentations are not of great size, this section of the coast is perhaps the most broken of any equal sector on the whole southern and eastern coast line of Asia. The principal ports are Santuao, Foochow, Amoy and Swatow; but there are many anchorages along the coast. Rocks, tidal-currents, and shoals, however, greatly minimize the utility of these anchorages. The tides are rather severe on parts of the Fukien coast as the island of Formosa divides the tides and they enter Formosa Strait from both ends.

The main agricultural products of this region are tea, rice, tobacco, camphor, sugar, wheat, ginger and fruits. Formerly Fukien was the greatest

tea producing province in China, and Amoy was the most noted of the tea ports. The industry has declined considerably in recent years. The forests of Fukien are quite extensive and furnish a great deal of timber for export. The province is rich in minerals, but, as in so many other parts of China, systematic exploitation has only been talked about. A high grade of anthracite coal is found as well as extensive deposits of bituminous coal. The tea and timber trade, however, constitutes the great industry of the province.

The population of Fukien is great, with a density of about 493 to the square mile. The area is similar to that of the state of Mississippi. The spoken language of this region is quite distinct from the rest of China, even South China, and shows numerous dialectical variations. In fact a coastal strip some two hundred miles wide and extending southwest from Shanghai to Tongkin, will include just about all the major linguistic differences of the Chinese. Outside this strip the dialectical variations, to the extent of becoming mutually unintelligible, are not so numerous or widespread as many believe. The Chinese are peculiar in that for the most part, until a degree of interest or intimacy has been established, they will make no effort to understand a stranger. This is particularly true among country people in the more remote districts, and has tended to exaggerate current ideas on the variability of Chinese dialects. Many peoples of the world on hearing someone trying to speak their language, will at least guess at the meaning intended. Generally speaking the Chinese will not even guess until one succeeds in arousing their interest to a point a little beyond mere curiosity. This situation is not so apparent in the large cities along the coast where foreigners have ceased to be so much of a curiosity. It is not uncommon for a Chinese in a district having a so-called local dialect, to refuse to understand a visiting Chinese, but after the expenditure of more or less energy in inducing him to listen, the same fellow will understand quite easily. It has been estimated that a person possessing a sound understanding of correctly spoken Mandarin Chinese, can understand and be understood by, three-fourths of the population of China, or roughly 300,000,000 persons. What other language or dialect in the world is intelligible to so many?

The provinces of Fukien and Kwangtung furnish the bulk of China's emigrants abroad. Chinese are found in most all parts of the world but rarely is one seen who hails from other parts of China. They constitute an element of considerable wealth to these provinces as they send home yearly several millions of dollars.

CHINA AND WORLD POLITICS

The geography of China is a most fascinating study, and one that is quite essential to a fuller appreciation of other "Things Chinese". China is a country of fabulous wealth, actual and potential. It has the charm of antiquity and the lure of things hidden. It is a country in the throes of

revolution, a great revolution,—social, economic and political. Tendencies are taking shape slowly—very slowly—which may be of tremendous import to humanity. China has very recently, relatively speaking, entered the stream of what westerners are prone to call World History. In recognition of what seems to be a westward movement of the center of world interest we now not infrequently hear allusions to the dawn of the “Pacific Era” in world politics. The Chinese must, by virtue of their geographical position if nothing else, be a major factor in any international developments on the Pacific. The Chinese are a virile people and possess infinite resources, spiritual and material. They seem destined to occupy a notable place in the events of this and succeeding centuries. There are so many of them.

The foregoing notes are sketchy and can pretend to touch but few of the high spots in a field so extensive as the geography of China. They have been compiled from many sources, some of which are listed below. There is much difference of opinion among those who write books on China—even on so prosaic a subject as its geography. China is so little known that much has to be inferred in order to sketch in any sort of a complete picture of the country, and everyone tries to picture it all. So much to be inferred leads to many opinions and little unanimity. These notes follow what is believed to be the best authorities on the subject and an attempt has been made to present the broad outlines (together with a few details not strictly geographical of the general physical features of China.

REFERENCES

- | | |
|---|--|
| Sanford | Universal Geography, Vol. IV. |
| Reclus | Compendium of Geography, Vol. II. |
| Ridge, Sheldon | Chinese Geography |
| Creesy | Geography of China |
| Richard | Comprehensive Geography of the Chinese Empire |
| Williams | The Middle Kingdom, Vol. I and II. |
| Yule, Sir Henry | Marco Polo, Vol. I and II. |
| Stein, Sir Aurel | Ruins of Desert Cathay, Vol. I. and II. |
| Little, Archibald | The Far East |
| Richthofen | Letters |
| Huc, Friar | Travels in the Chinese Empire, Vol. I. and II. |
| Ravenstein | The Russians on the Amur |
| James | The Long White Mountain |
| Gill | The River of Golden Sand |
| Ward, Kingdon | The Mystery Rivers of Tibet |
| Hedin, Sven | My Life as an Explorer |
| Prejevalsky | From Kulja Across the Tianshan to Lob Nor |
| Bretchneider | Medieval Researches, Vol. I. and II. |
| The New Atlas and Commercial Gazetteer of China | E. J. Dingle, Editor |
| Bulletins | China International Famine Relief Commission |
| China Year Book | 1913, 1920, 1922 to 28 |



That Good Gulf Gasoline
For More Power
Gulf No-Nox Motor Fuel
Stops Knocks
Supreme Motor Oil
For a Smooth Running Motor

"At the Sign of the Orange Disc"

GULF REFINING CO.

THOMPSON GUNS

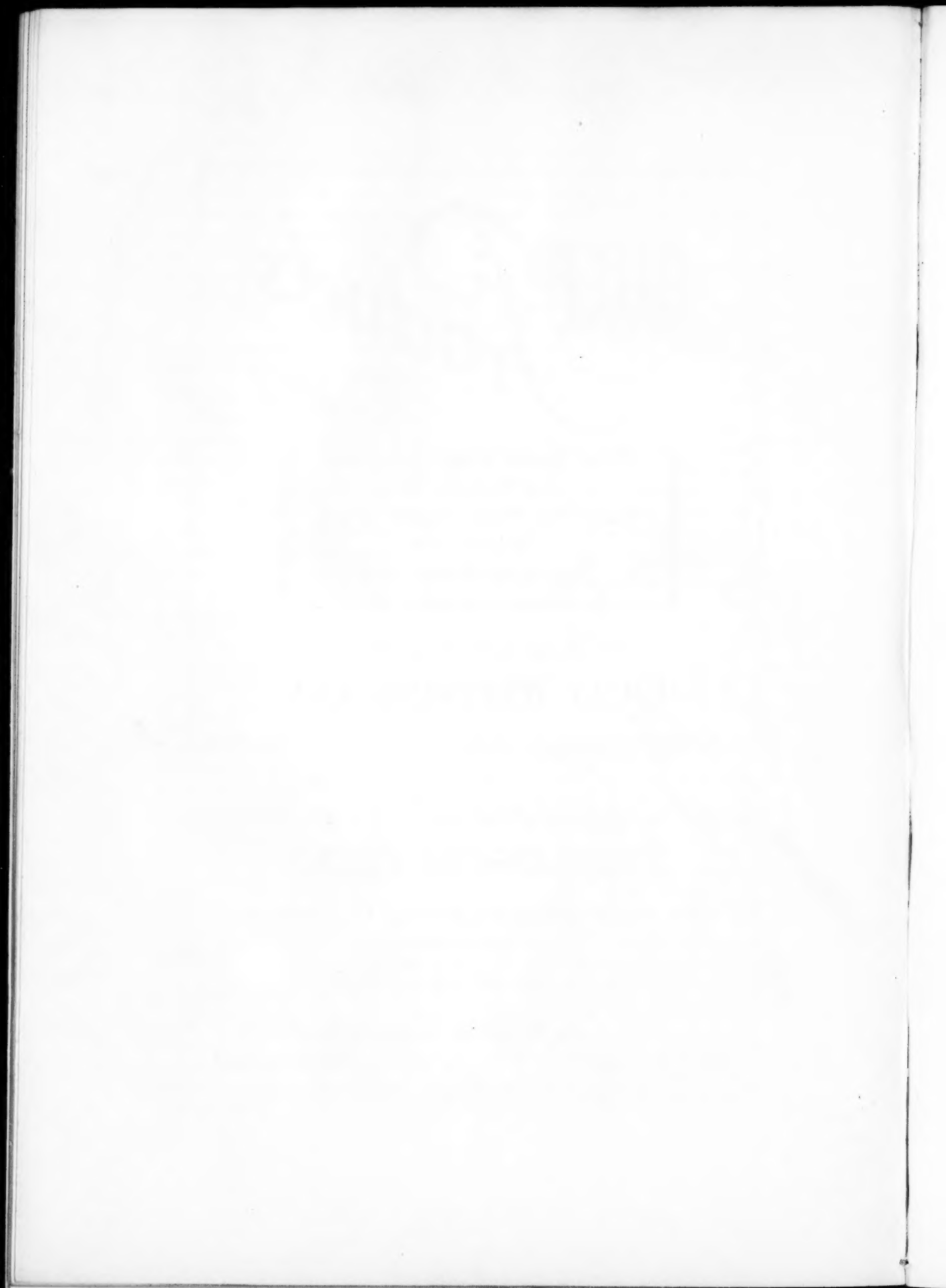
*The most effective portable firearms
in existence*

WRITE US FOR PARTICULARS

AUTO-ORDNANCE CORPORATION

302 BROADWAY

NEW YORK CITY



Our advertisers are friends in whose integrity we have every confidence. We trust that the appearance of their advertisements in this magazine will establish with our readers a cordial relationship which will be mutually beneficial.

New - Up-to-Date - Complete - Authoritative - Pocket-size - Official

An old friend makes its reappearance

Infantry Drill Regulations

(Vol. II, Basic Field Manual)

For the first time since before the World War INFANTRY DRILL REGULATIONS are again available in book form under a single cover. This is the official text of the War Department, which we offer to the Marine Corps.

TABLE OF CONTENTS

PART ONE—Drill:

Introduction.
Drill and Combat Signals.
Dismounted, without Arms.
Dismounted, with Rifle and Automatic Rifle.
Manual of the Pistol.
Manual of the Guidon.
Close Order. Rifle Squad to Brigade, inclusive.
Close Order. Headquarters and Service Companies, Howitzer Squad, Platoon and Company, Machine Gun Squad, Platoon and Company.
Extended Order. Rifle and Machine Gun Squad, Platoon and Company.

PART TWO—Ceremonies and Inspections:

Dismounted Ceremonies.
Inspections.

PART THREE—The Infantry Pack. Display of Equipment. Tent Drill:

The Infantry Pack.
Display of Equipment, Foot Troops.
Shelter Tent Drill.
Wall and Pyramidal Tent Drill.

APPENDIX:

Tables of Equipment, Infantry Rifle Squad.

TOPICAL INDEX

The New text replaces 20 Training Regulations!

Note the "deadly parallel" of comparison:

	I. D. R.	20 Training Regulations
Cost	\$1.60	\$2.70 (incl. binder)
Number of pages	272	450
Size	7 $\frac{7}{8}$ x 4 $\frac{1}{2}$ x $\frac{1}{2}$ ins.	9 $\frac{1}{4}$ x 6 $\frac{1}{8}$ x 1 ins.
Weight	8 oz.	2 lbs. 3 oz.
Number of changes published	None	Twenty-five

PRICES

In cloth binding, \$1.60 Postpaid
In flexible water-proof leatherette binding, \$1.80 Postpaid
25% discount f. o. b. Washington on orders of 10 or more books.
30% discount f. o. b. Washington on orders of 100 or more books.
Your name stamped in gold on leatherette binding, 35 cents a copy.

Book Department

MARINE CORPS ASSOCIATION

1115 17th Street

WASHINGTON, D. C.

"READ-TAYLOR" Baltimore